

L9 ANSWER 12 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:323894 CAPLUS

DOCUMENT NUMBER: 125:9204

TITLE: Production of β -glucan and from cereal grains

INVENTOR(S): Wang, Linji; Lynch, Ike E.; Goering, Kenneth

PATENT ASSIGNEE(S): Centennial Foods, Inc., USA

SOURCE: U.S., 4 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5512287	A	19960430	US 1994-241857	19940512
PRIORITY APPLN. INFO.:			US 1994-241857	19940512

AB Cereal grains (e.g., barley and oat) are ground and slurried in water below the starch gelatinization temperature Bran, starch granules, and protein are removed. β - Glucan is precipitated and dehydrated with alc. (e.g., isopropanol), screened, and ground to become a white-colored product with a neutral flavor. The method recovers 33-75% of the total natural occurring β - glucan in cereal grains. The β - glucan product is water-soluble with purity ranging from 60-90% and exhibiting mol. wt. of β - glucan ranging from 4 + 105 to 2 + 106 Da.

L9 ANSWER 9 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:35060 CAPLUS

DOCUMENT NUMBER: 128:114241

TITLE: Extraction and functional properties of barley
 β -glucan as affected temperature and pH

AUTHOR(S): Temelli, Feral

CORPORATE SOURCE: Dept. of Agricultural. Food & Nutritional Science,
Univ. of Alberta, AB, T6G 2P5, Can.

SOURCE: Journal of Food Science (1997), 62(6), 1194-1197, 1201
CODEN: JFDSA; ISSN: 0022-1147

PUBLISHER: Institute of Food Technologists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Barley is high in β - **glucan**, a soluble fiber component.

Effects of extraction temperature (40-55 C) and pH (7.0-10.0) on recovery,
purity and functional properties of β - **glucan** were

investigated on whole Condor barley flour. At pH 7.0, 8.0 and
55°C, 86.5% of the β - **glucan** in the feed flour was

recovered in the gum product with 89.1% (dry wt.) **purity**

. β - **Glucan** content increased (p <0.05) with temperature but not
with pH. Apparent viscosity of 1% (wt./volume) dispersions of

β - **glucan** gum from pH 7.0 increased (p <0.05) with extraction
temperature at constant shear rate and viscosity decreased slightly with

increasing shear rate. Whippability and foam stability of gums from pH

8.0 and 45°C were maximum Emulsions prepared with β - **glucan**

gum from pH 7.0 and 55°C were 63% stable after centrifugation.

Barley β - **glucan** shows great potential as a thickener or

stabilizer.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 8 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:374602 CAPLUS

DOCUMENT NUMBER: 133:119330

TITLE: Effect of extrusion cooking on the primary structure and water solubility of β -glucans from regular and waxy barley

AUTHOR(S): Jiang, Gaosong; Vasanthan, Thava

CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Can.

SOURCE: Cereal Chemistry (2000), 77(3), 396-400

CODEN: CECHAF; ISSN: 0009-0352

PUBLISHER: American Association of Cereal Chemists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Water-soluble β -glucan from native and extrusion-cooked barley flours of two barley cultivars, Candle (a waxy starch barley) and Phoenix (a regular starch barley), was isolated and purified. The purity of β -glucan samples was 85-93% (wt./wt. ., dry wt. basis) for Candle and 77-86% (wt./wt., dry wt. basis) for Phoenix. The water solubility of β -glucan (at room temperature, 25°C) in the native and extruded flours (primary solubility) was different from that of the purified β -glucan samples (secondary solubility). The solubility of β -glucan in the native and extruded Candle flour was substantially higher than that of β -glucan in Phoenix. For both cultivars, β -glucan in the extruded flours had solubility (primary solubility) values higher than in their native counterparts. The solubility of β -glucan in the purified β -glucan samples differed depending on the barley cultivar and the extrusion conditions employed. The glycosidic linkage profiles of purified soluble β -glucan from native and extruded barley flours were determined in order to understand the changes in the primary structure of β -glucan and the effect of extrusion on the β -glucan structure-solubility relationship.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 12 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:592751 CAPLUS

DOCUMENT NUMBER: 133:179211

TITLE: Isolated water-soluble polysaccharide films or concentrates and preparation and uses thereof

INVENTOR(S): Potter, Richard C.; Fisher, Philip A.; Hash, Kirk R., Sr.; Neidt, John D.

PATENT ASSIGNEE(S): Nuture, Inc., USA

SOURCE: PCT Int. Appl., 26 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2000049052	A2	20000824	WO 2000-US3886	20000215
WO 2000049052	A3	20001228		
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6323338	B1	20011127	US 1999-252356	19990217
US 6485945	B1	20021126	US 1999-444214	19991119
CA 2361308	AA	20000824	CA 2000-2361308	20000215
EP 1155042	A2	20011121	EP 2000-911826	20000215
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
AU 770140	B2	20040212	AU 2000-33656	20000215
US 2004049026	A1	20040311	US 2003-659941	20030911
AU 2004202019	A1	20040610	AU 2004-202019	20040512
PRIORITY APPLN. INFO.:			US 1999-252356	A 19990217
			US 1999-444214	A 19991119
			WO 2000-US3886	W 20000215
			US 2001-921846	A1 20010802

AB An entirely aqueous method for concentrating water-soluble polysaccharides, especially

β -glucan, having mol. wts. \geq apprx. 50 kDa comprises

forming a film by evaporating aqueous polysaccharide solns. until a surface film

forms and harvesting the polysaccharide-enriched film. The polysaccharide can be of plant or animal origin, and includes polysaccharides such as guar gum, xanthan gum and pectin. The isolated polysaccharides are useful in food products, pharmaceutical compns., and cosmetic compns. (no data). Thus, a 10% solids water slurry of 50 lb flour from milled com. oat bran was pumped to a vibratory screen with an overhead water spray, the oversized material was fed to an extractor fitted with a propeller agitator, water was added to 100 gal, the mixture extracted 2 h at 60° and pH 10, centrifuged, the supernatant heated 15 min at 80° and pH 4, and cooled to <30°, giving a solution containing 0.72% solids and 42.9% β -glucan. The solution (3 in.) was placed in a steam-heated 23 in. x 48 in. x 7 in. tray at 87°, with skins harvested every 15 min, with >2 dozen skins taken. The skins were combined and dried, giving β -glucan concentration 67.5%.

L12 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:534225 CAPLUS
DOCUMENT NUMBER: 115:134225
TITLE: A glucan-chitin mixture from Candida albicans BMM-12
INVENTOR(S): Cassone, Antonio; Bistoni, Francesco; Marconi, Pier
Francesco
PATENT ASSIGNEE(S): Consiglio Nazionale delle Ricerche, Italy; Istituto
Superiore di Sanita
SOURCE: Eur. Pat. Appl., 3 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 416343	A2	19910313	EP 1990-115690	19900816
EP 416343	A3	19910925		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 2023496	AA	19910305	CA 1990-2023496	19900817
HU 59726	A2	19920629	HU 1990-5752	19900903
JP 03119995	A2	19910522	JP 1990-232614	19900904
PRIORITY APPLN. INFO.:			IT 1989-21606	A 19890904

AB A glucan-chitin mixture containing ≥ 90 wt.%
of glucan with the phys. appearance of microscopic
glucan bodies is manufactured by culturing C. albicans BMM-12. C.
albicans BMM-12 was shake-cultured in a Winge soil (glucose, yeast extract
and water) at 28°. After centrifugation, the cell mass was
collected and processed to the glucan-containing product (yield,
13%) by autoclaving, alkali (NaOH 1 weight .permill.) and acetic acid (0.5
solution) treatment, and centrifugation.

L2 ANSWER 4 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:664557 CAPLUS

DOCUMENT NUMBER: 141:379158

TITLE: Dietary fibre in fermented oat and barley β -
glucan rich concentrates

AUTHOR(S): Lambo, Adele M.; Oste, Rickard; Nyman, Margareta E.
G.-L.

CORPORATE SOURCE: Applied Nutrition and Food Chemistry, Center for
Chemistry and Chemical Engineering, Lund University,
Lund, SE-221 00, Swed.

SOURCE: Food Chemistry (2005), 89(2), 283-293
CODEN: FOCHDJ; ISSN: 0308-8146

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The ability of different lactic acid bacteria to influence the physicochem. characteristics (content, viscosity and mol. wt.) of dietary fiber in β - **glucan**-rich barley and oat **concs.** was investigated. The cultures used were Lactobacillus acidophilus and the exopolysaccharide producing strain Pediococcus damnosus 2.6, together with the yogurt culture, V2 (a mixture (1:1) of Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus salivarius subsp. thermophilus). Two methodologies, one including filtration and another centrifugation-dialysis, to quantify the dietary fiber, were compared. The centrifugation-dialysis method generally gave significantly ($P < 0.05$) higher values than the filtration method (for example, 79.8 g/100 g DW vs. 59.6 g/100 g DW for the total fiber in the native barley fiber **conc.**) with the exception of soluble barley fibers. The insol. fiber content was found to decrease after fermentation (58.8 g/100 g DW to 39.0/37.0 g/100 g DW in barley and 26.0 g/100 g DW to 4.5/3.0 g/100 g DW in oats as analyzed by the centrifugation-dialysis method). The soluble fiber in the barley fiber **conc.** was apparently not affected by fermentation, while contents and maximum viscosities of the soluble fiber in oat fiber **concs.** decreased after fermentation. However, the mol. wt. was apparently not affected.

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L2 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:126261 CAPLUS

DOCUMENT NUMBER: 124:174160

TITLE: Extraction of oat gum from oat bran: effects of process on yield, molecular **weight** distribution, viscosity and (1→3)(1→4)-β-D-glucan content of the gum

AUTHOR(S): Beer, Michael U.; Arrigoni, Eva; Amado, Renato

CORPORATE SOURCE: Dept. of Food Science, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.

SOURCE: Cereal Chemistry (1996), 73(1), 58-62

CODEN: CECHAF; ISSN: 0009-0352

PUBLISHER: American Association of Cereal Chemists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Different processing technologies were examined for their efficiency in production of large amts. of good quality oat gum rich in (1→3)(1→4)-β-D- **glucan**. Untreated and enzyme-deactivated oat bran **conc.** were extracted with aqueous sodium carbonate at pH 10 and 40°C. Oat gums were subsequently isolated either by dialysis, ultrafiltration, or alc. precipitation on small, medium, and

pilot plant scales. It was possible to produce oat gums with a β- **glucan** content of ≈60-65% with all three methodologies. The viscosity of solns. of the gums and the mol. **wts.** differed, depending on the production process. Using dialysis, the production of highly viscous gums was possible, whereas ultrafiltration and alc. precipitation yielded

gums with lower solution viscosity. Enzyme-deactivated oat bran **conc.** gave an oat gum with an increased β- **glucan** content and solution viscosity, but in lower yield. To produce large amts. of oat gum, alc. precipitation would be the process of choice, but ultrafiltration and dialysis are useful alternatives.

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CORPORATE SOURCE: Dept. of Food Science, Swiss Federal Institute of Technology, Zurich, CH-8092, Switz.

SOURCE: Cereal Chemistry (1996), 73(1), 58-62
CODEN: CECHAF; ISSN: 0009-0352

PUBLISHER: American Association of Cereal Chemists

DOCUMENT TYPE: Journal

LANGUAGE: English

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L2 ANSWER 14 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:601172 CAPLUS
DOCUMENT NUMBER: 127:292328
TITLE: Carbohydrate and lignin contents of plant materials
used in animal feeding
AUTHOR(S): Bach Knudsen, Knud Erik
CORPORATE SOURCE: Danish Institute of Agricultural Sciences, Department
of Nutrition, Research Centre Foulum, PO Box 50,
DK-8830, Tjele, Den.
SOURCE: Animal Feed Science and Technology (1997), 67(4),
319-338
CODEN: AFSTDH; ISSN: 0377-8401
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A total of 115 samples representing 38 different feedstuffs was analyzed
for carbohydrates and lignin. The samples were analyzed for low-mol.
wt. (LMW) sugars by high-performance liquid chromatog., starch,
fructan and mixed linked $\beta(1\rightarrow3;1\rightarrow4)$ -D- **glucan**
by colorimetry, total, soluble and insol. non-starch polysaccharides (NSP) by
gas-liquid chromatog. and lignin by gravimetry. For all but alfalfa meal,
almost quant. recovery of carbohydrates and lignin was obtained with a
deviation between calculated and analyzed values of less than 2 g/kg dry
matter. The correlation between calculated and analyzed values was 0.985
($P < 0.0001$). The concentration (g/kg dry matter) of LMW-sugars varied from 5

g/kg

and up to 137 g/kg with the lowest values found in cereal substitutes,
whole grain cereals and byproducts while the protein **concs.** in
general had the highest content of LMW-sugars (57-137 g/kg). Starch was
the main polysaccharide in whole grain cereals where it varied from 468
g/kg in oats to 690 g/kg in maize, in cereal byproducts (93-902 g/kg) and
in tapioca (768 g/kg). In contrast, the concentration of starch was low in all
protein **concs.** but peas and faba beans. The lowest levels of
NSP and lignin were found in maize flour (NSP, 21 g/kg; lignin, 4 g/kg)
and the highest levels in oat hull meal (NSP, 503 g/kg; lignin, 148 g/kg).
There was also a significant variation in NSP and lignin in protein
concs. with the NSP value varying from 189 g/kg in faba beans to
451 g/kg in white lupines and with lignin varying from 12 g/kg in white
lupines to 133 g/kg in sunflower cake. Grass meal, alfalfa meal and sugar
beet fiber had in general high **concs.** of NSP and lignin with values in
grass and alfalfa meals of NSP: 329-426 g/kg and lignin: 128-169 g/kg and
in sugar beet fiber 779 g/kg and 35 g/kg, resp.

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:126261 CAPLUS
DOCUMENT NUMBER: 124:174160
TITLE: Extraction of oat gum from oat bran: effects of
process on yield, molecular **weight**
distribution, viscosity and $(1\rightarrow3)(1\rightarrow4)$ -
 β -D-glucan content of the gum
AUTHOR(S): Beer, Michael U.; Arrigoni, Eva; Amado, Renato
CORPORATE SOURCE: Dept. of Food Science, Swiss Federal Institute of
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SOURCE: Cereal Chemistry (1996), 73(1), 58-62
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Different processing technologies were examined for their efficiency in
production of large amts. of good quality oat gum rich in
 $(1\rightarrow3)(1\rightarrow4)$ - β -D- **glucan**. Untreated and

enzyme-deactivated oat bran conc. were extracted with aqueous sodium carbonate at pH 10 and 40°C. Oat gums were subsequently isolated either by dialysis, ultrafiltration, or alc. precipitation on small, medium, and pilot plant scales. It was possible to produce oat gums with a β -glucan content of ≈ 60 -65% with all three methodologies. The viscosity of solns. of the gums and the mol. wts. differed, depending on the production process. Using dialysis, the production of highly viscous gums was possible, whereas ultrafiltration and alc. precipitation yielded gums with lower solution viscosity. Enzyme-deactivated oat bran conc. gave an oat gum with an increased β -glucan content and solution viscosity, but in lower yield. To produce large amts. of oat gum, alc. precipitation would be the process of choice, but ultrafiltration and dialysis are useful alternatives.

L2 ANSWER 16 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:381931 CAPLUS
DOCUMENT NUMBER: 122:159179
TITLE: Enriched protein- and β -glucan fractions from high-protein oats by air classification
AUTHOR(S): Wu, Victor Y.; Stringfellow, Arthur C.
CORPORATE SOURCE: Biopolymer Res. Unit, Natl. Cent. Agricultural Utilization Res., Peoria, IL, USA
SOURCE: Cereal Chemistry (1995), 72(1), 132-4
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB High-protein oat groats were defatted once (1X) or three times (3X) and air-classified. The protein contents of the 1X and 3X defatted materials were 23.4 and 23.5%, resp.; the combined high-protein fine fractions from air classification had protein contents of 30.1 and 32.7%. These fractions accounted for 21 and 24% of the wt. (and for 27 and 33% of the total protein) of the 1X and 3X defatted groats, resp. The coarse residue fraction ($>30\ \mu\text{m}$) from air classification of 1X and 3X defatted groats had β -glucan contents of 16.9 and 17.7%, resp., compared with 6.1-6.2% in the original defatted groats. These coarse residue fractions accounted for 30 and 28% wt. and 82% of total β -glucan of the 1X and 3X defatted groats, resp. Useful protein shifting was 25% for the 1X and 30% for the 3X defatted groats. Useful β -glucan shifting was 104% for the 1X and 107% for the 3X defatted groats. Air classification of high-protein oat groats may have com. potential for producing protein conc. and enriched β -glucan fraction in a single process.

L2 ANSWER 17 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:76275 CAPLUS
DOCUMENT NUMBER: 120:76275
TITLE: Effects of oat-bran concentration on rat serum lipids and liver fat infiltration
AUTHOR(S): Malkki, Y.; Torronen, R.; Pelkonen, K.; Myllymaki, O.; Hanninen, O.; Syrjanen, K.
CORPORATE SOURCE: Food Res. Lab., Tech. Res. Cent. Finland, Espo, FIN-02151, Finland
SOURCE: British Journal of Nutrition (1993), 70(3), 767-76
CODEN: BJNUAV; ISSN: 0007-1145
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Oat bran concentrated with respect to both soluble and insol. dietary fiber was fed to adult rats, and its effects on serum cholesterol and liver fat infiltration were studied. The feeds contained 15, 30 or 45 g β -glucan/kg, except in control groups where the fiber of the feed

was cellulose. Half the exptl. groups received the feeds with an addition of 10 g cholesterol and 2 g cholic acid/kg in order to create an hypercholesterolemic condition. In normocholesterolemic rats the concentrated oat bran did not cause any significant changes in serum cholesterol concns., but reduced liver wt. compared with control group rats fed on the cellulose-containing diet. In hypercholesterolemic rats the concentrated oat bran reduced serum total cholesterol and increased high-d.-lipoprotein cholesterol concentration. The effect was seen already at the 15 g/kg concentration of β -glucan; the higher doses tested did not significantly improve the effect. Infiltration of fat into liver cells, especially in the periportal areas, was observed only in hypercholesterolemic animals. The fat infiltration was accentuated in proportion to the amount of oat-bran conc. fed.

L2 ANSWER 18 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1993:602202 CAPLUS

DOCUMENT NUMBER: 119:202202

TITLE: Improved beer filterability. Improvement in the utilization of malt enzyme potential

AUTHOR(S): Annemuellner, Gerolf; Aust, Christine; Kuenzel, Katrin; Bauch, Thomas

CORPORATE SOURCE: Fachbereich Lebensmittelwiss. Biotechnol. i.G., Tech. Univ. Berlin, Berlin, Germany

SOURCE: Brauwelt (1993), 113(9), 365-8, 370-2, 374, 383

CODEN: BRUWAQ; ISSN: 0006-9329

DOCUMENT TYPE: Journal

LANGUAGE: German

AB An endo- β -glucanase-rich conc., low in endopeptidase activity was obtained from malt during the tech. mashing process by crossflow membrane microfiltration. Mash was pumped through a ceramic tube module with pore widths of 0.2 μ m, whereby the mother liquor was returned to the mash and the filtrate subjected to crossflow filtration through a membrane with a nominal cutoff of mol. wt. 50,000 Daltons. The β -glucanases were thus concentrated in the retentate and the peptidases (responsible for low beer foam stabilities) were returned with the permeate to the mash. Application of the endo- β -glucanase-rich conc. to worts during the brewing process resulted in beers exhibiting improved beer filterability ($\leq 200\%$) resulting from an increased β -glucan degradation, yet without strongly affecting product head stability.

L2 ANSWER 19 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1993:168165 CAPLUS

DOCUMENT NUMBER: 118:168165

TITLE: Oat bran concentrates: physical properties of β -glucan and hypocholesterolemic effects in rats

AUTHOR(S): Malkki, Yrjo; Autio, Karin; Hanninen, Osmo; Myllymaki, Olavi; Pelkonen, Kai; Suortti, Tapani; Torronen, Riitta

CORPORATE SOURCE: Food Res. Lab., VTT Tech. Res. Cent., Espoo, SF-02151, Finland

SOURCE: Cereal Chemistry (1992), 69(6), 647-53

CODEN: CECHAF; ISSN: 0009-0352

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Viscosity, hydrodynamic properties, and mol. wt. distribution of β -glucan in oat bran and variously prepared fiber concs. were investigated, and the results were correlated with the hypocholesterolemic effect in rats receiving bran or the concs. as a dietary supplement. In neutral aqueous exts. of samples having similar total β -glucan content, an EtOH-water, wet-milled

conc. gave higher viscosities than untreated oat bran or cold-water, wet-milled conc. However, β -glucan isolated by hog alkaline extraction from untreated bran gave higher viscosity than

β -glucan preps. isolated from the concs. The viscosity and mol. wt. of β -glucan was reduced at acidic conditions under concentration and by trypsin. β -Glucan from a cold-water, wet-milled conc. had the highest mol. wt. and also higher hydrodynamic volume than β -glucan isolated from the other concs. In rats fed diets containing 3.3% β -glucan from oat bran fiber concs. but no added cholesterol or cholic acid, the serum total cholesterol level was lowered by 30% with the EtOH-water, wet-milled conc. and by 10% with the cold-water, wet-milled or hydrolyzed conc. relative to the initial cholesterol levels and to the levels of the control group receiving cellulose in the diet. The diet containing untreated oat bran was ineffective. Dependence of the hypocholesterolemic action on extractability, viscosity, hydrodynamic properties, and mol. wt. of β -glucan is discussed.

L2 ANSWER 20 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:254188 CAPLUS

DOCUMENT NUMBER: 116:254188

TITLE: Physical properties of (1 \rightarrow 3), (1 \rightarrow 4)- β -D-glucan preparations isolated from Finnish oat varieties

AUTHOR(S): Autio, K.; Myllymaki, O.; Suortti, T.; Saastamoinen, M.; Poutanen, K.

CORPORATE SOURCE: Food Res. Lab., Tech. Res. Cent. Finland, Espoo, 02150, Finland

SOURCE: Food Hydrocolloids (1992), 5(6), 513-22
CODEN: FOHYES; ISSN: 0268-005X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The β -glucan content in the groats of different Finnish oat varieties cultivated in Finland varied from 3.2 to 5.3% and, in the fiber concs. obtained by dry milling and a further concentration step including hot ethanol treatment and wet milling, from 11.8 to 18.3%. The viscosities of the isolated crude exts. varied widely between the varieties. Stil, Puhti, Yty and Nasta formed the most viscous solns. and Pol, the typical feed oat, the least viscous solution. The more significant differences in the viscosities between the oat varieties when measured at the same β -glucan concentration could be explained in terms of differences in mean mol. wt. Trypsin decreased the viscosity and the mol. wt. of β -glucan of all samples. The viscosity of the β -glucan solns. was independent of pH both before or after enzyme treatment, indicating that the protein or peptide is firmly bound to β -glucan.

L2 ANSWER 21 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1986:53375 CAPLUS

DOCUMENT NUMBER: 104:53375

TITLE: Oil recovery using a polymer containing fluid

INVENTOR(S): Stipanovic, Arthur J.

PATENT ASSIGNEE(S): Texaco Inc., USA

SOURCE: U.S., 11 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4548268 A 19851022 US 1983-566119 19831227
 PRIORITY APPLN. INFO.: US 1983-566119 19831227
 AB Aqueous drilling fluids with stable viscosity are prepared by mixing with
 ≥ 200 ppm (1 \rightarrow 6)- β -D- **glucan** (I) having mol.
 wt. 20,000 and recurring units of gentiobiose (or a **conc**
 . of I dissolved in DMSO) and ≥ 4 mol urea. Thus, an aqueous drilling
 fluid was prepared by mixing with 1000 ppm **conc.** of I
 (deacetylated pustulan) dissolved in DMSO and 4 mol urea. The resulting
 fluid showed no increase in viscosity on aging for 8 days.

L2 ANSWER 22 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1981:116628 CAPLUS
 DOCUMENT NUMBER: 94:116628
 TITLE: Purification and properties of endo- α -1,3-
 glucanase from a Streptomyces chartreusis strain
 AUTHOR(S): Takehara, Tadamichi; Inoue, Masakazu; Morioka, Toshio;
 Yokogawa, Kanae
 CORPORATE SOURCE: Sch. Dent., Kyushu Univ., Fukuoka, 812, Japan
 SOURCE: Journal of Bacteriology (1981), 145(2), 729-35
 CODEN: JOBAAY; ISSN: 0021-9193
 DOCUMENT TYPE: Journal
 LANGUAGE: English

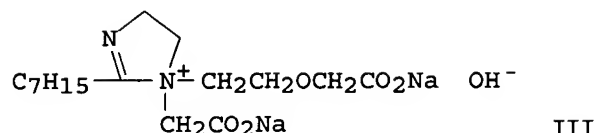
AB An enzyme hydrolyzing the water-insol. glucans produced from sucrose by
 Streptococcus mutans was purified from the culture **conc.** of S.
 chartreusis strain F2 by ion-exchange chromatog. on DEAE-cellulose and
 CM-cellulose columns and gel filtration on Bio-Gel A-1.5m. The purification
 achieved was 6.4-fold, with an overall yield of 27.3%. Electrophoresis of
 the purified enzyme protein gave a single band on a SDS-polyacrylamide gel
 slab. Its mol. wt. was estimated to be .apprx.68,000, but there is
 a possibility that the native enzyme exists in an aggregated form or is an
 oligomer of the peptide subunits, having a mol. wt. >300,000.
 The pH optimum of the enzyme was 5.5-6.0, and its temperature optimum was
 55°. The enzyme lost activity on heating at 65° for 10 min.
 The enzyme activity was completely inhibited by the presence of 1 mM Mn²⁺,
 Hg²⁺, Cu²⁺, Ag⁺, or Merthiolate. The Km for the water-insol.
 glucan of S. mutans OMZ176 was an amount of **glucan** equivalent
 to 1.54 mM glucose, i.e., 0.89 mM in terms of the α -1,3-linked
 glucose residue. The purified enzyme was specific for glucans containing an
 α -1,3-glucosidic linkage as the major bond. The enzyme hydrolyzed
 the S. mutans water-insol. glucans endolytically, and the products were
 oligosaccharides. These results indicate that the enzyme elaborated by S.
 chartreusis strain F2 is an endo- α -1,3-glucanase (EC 3.2.1.59).

L2 ANSWER 23 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1978:63825 CAPLUS
 DOCUMENT NUMBER: 88:63825
 TITLE: Fire fighting with thixotropic foam
 INVENTOR(S): Chiesa, Peter J., Jr.
 PATENT ASSIGNEE(S): Philadelphia Suburban Corp., USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 13
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4060489	A	19771129	US 1976-670252	19760325
US 3849315	A	19741119	US 1972-254404	19720518
US 3957657	A	19760518	US 1973-369584	19730613
US 4038195	A	19770726	US 1974-525175	19741119
US 4060132	A	19771129	US 1975-557757	19750312
US 4149599	A	19790417	US 1977-808462	19770621

US 4387032	A	19830607	US 1980-214260	19801208
PRIORITY APPLN. INFO.:			US 1971-131763	A2 19710406
			US 1972-254404	A2 19720518
			US 1972-307479	A2 19721117
			US 1973-369584	A2 19730613
			US 1974-525175	A2 19741119
			US 1975-557757	A2 19750312
			US 1974-434544	A 19740118
			US 1976-670252	A2 19760325
			US 1977-808462	A2 19770621
			US 1979-17858	A2 19790306

GI



AB Aqueous pumpable concns. for fires on hydrophilic as well as hydrophobic liqs. are prepared from foaming agents and thixotropic polysaccharides, e.g., **scleroglucan** (I) [39464-87-4], which, in the absence of shear, causes the solution to form a gel resistant to nonaq. hydrophilic liqs. A foam stabilizing solid hydrophilic resin and/or filming material may be added to form a film over burning hydrophilic liqs. and N-methyl-2-pyrrolidinone (II) [872-50-4] may be added to make the **conc.** more adaptable for ready dilution and improve stability. Thus, a fire extinguishing concentration is prepared from (CF₃)₂CF(CF₂)_nCO₂H.NH₂Et [n = 2 (20), n = 4 (30), n = 6 (30), and n = 8 (20%)] 2040 g, I 1540 g, Me₃Si[OSiMe(C₃H₆OCH₂CH(OH)CH₂NMe(CH₂)₂SO₃Na)]₃OSiMe₃ [54785-07-8] 4710, ethylene glycol [107-21-1] 9600, a 10 wt.% aqueous solution of 3-(dimethylamino)propylaminated ethylene-maleic anhydride copolymer 11,800, III [7702-01-4] 10,800, H₂O 1800, a 10% 1:1 aqueous solution of Na decyl sulfate [142-87-0] and Na octyl sulfate [142-31-4] 13,920, and II 53,520 mL.

L2 ANSWER 24 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1967:72554 CAPLUS

DOCUMENT NUMBER: 66:72554

TITLE: Polysaccharides of fodder yeasts. I. Isolation

AUTHOR(S): Usov, A. I.; Kochetkov, N. K.

SOURCE: Zhurnal Obshchei Khimii (1967), 37(1), 86-91

CODEN: ZOKHA4; ISSN: 0044-460X

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB cf. following abstract The crude polysaccharides from protein-carbohydrate yeast **concentrate** were extracted by heating with 2:1 CHCl₃-MeOH repeatedly, the residue heated 6 hrs. with 3% NaOH, centrifuged, neutralized with AcOH, and diluted with MeOH to give a water-soluble polysaccharide fraction of 22.5% of initial wt. of the **conc.** The insol. residue treated with 1% KMnO₄ at room temperature then heated with 1% HCl gave glucosamine, chitobiose, and glucose. The bulk of the polysaccharide fraction heated with dilute H₂SO₄ gave D-mannose, isolated as the phenylhydrazone. Alternatively, the mixed polysaccharides were centrifuged in H₂O, treated with cetyltrimethylammonium bromide, centrifuged, and then treated with aqueous AcOH-EtOH with a trace of HCl to give the mannan complex which, with pH 10 borate buffer, gave the purified polysaccharide which hydrolyzed to mannose and glucose. Alternatively, the mixed fraction of polysaccharides was treated with Fehling solution 1 day

to yield a Cu complex which with HCl gave purified mannan, and mixed glucose and mannose. The saccharides were also separated on DEAE-cellulose column in borate form, with elution by Na borate and finally aqueous NaOH. The polysaccharide fraction treated with salivary amylase gave a glycogen-like **glucan**, glucose, and maltose. The chromatographically separated **glucan** fractions A, B, and C were treated with KI-I₂ and absorption spectra of the complexes were reported. Periodate oxidation of the glucans gave glucose and erythritol from A and B fractions, while B fraction also gave HCO₂H after consumption of 1.1 moles periodate per anhydrohexose unit. Polysaccharides compose about 25% of total biomass of fodder yeasts of H-30 strain.

L2 ANSWER 25 OF 29 MEDLINE on STN
 ACCESSION NUMBER: 2004532419 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 15465756
 TITLE: Reduced and high molecular **weight** barley
 beta-glucans decrease plasma total and non-HDL-cholesterol
 in hypercholesterolemic Syrian golden hamsters.
 AUTHOR: Wilson Thomas A; Nicolosi Robert J; Delaney Bryan; Chadwell
 Kim; Moolchandani Vikas; Kotyla Timothy; Ponduru Sridevi;
 Zheng Guo-Hua; Hess Richard; Knutson Nathan; Curry Leslie;
 Kolberg Lore; Goulson Melanie; Ostergren Karen
 CORPORATE SOURCE: Center for Health and Disease Research, Department of
 Health and Clinical Sciences, University of
 Massachusetts-Lowell, Lowell, MA 01854, USA.
 SOURCE: The Journal of nutrition, (2004 Oct) Vol. 134, No. 10, pp.
 2617-22.
 Journal code: 0404243. ISSN: 0022-3166.
 PUB. COUNTRY: United States
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 200411
 ENTRY DATE: Entered STN: 27 Oct 2004
 Last Updated on STN: 9 Nov 2004
 Entered Medline: 8 Nov 2004

AB Consumption of concentrated barley beta-**glucan** lowers plasma
 cholesterol because of its soluble dietary fiber nature. The role of
 molecular **weight** (MW) in lowering serum cholesterol is not well
 established. Prior studies showed that enzymatic degradation of beta-
glucan eliminates the cholesterol-lowering activity; however,
 these studies did not evaluate the MW of the beta-**glucan**. The
 current study was conducted to evaluate whether barley beta-**glucan**
concentrates, partially hydrolyzed to reduce MW, possess
 cholesterol-lowering and antiatherogenic activities. The reduced MW
 fraction was compared with a high MW beta-**glucan**
concentrate from the same barley flour. Concentrated beta-
glucan preparations were evaluated in Syrian Golden F(1)B hamsters
 fed a hypercholesterolemic diet (HCD) with cholesterol, hydrogenated
 coconut oil, and cellulose. After 2 wk, hamsters were fed HCD or diets
 that contained high or reduced MW beta-**glucan** at a concentration
 of 8 g/100 g at the expense of cellulose. Decreases in plasma total
 cholesterol (TC) and non-HDL-cholesterol (non-HDL-C) concentrations
 occurred in the hamsters fed reduced MW and high MW beta-**glucan**
 diets. Plasma HDL-C concentrations did not differ. HCD-fed hamsters had
 higher plasma triglyceride concentrations. Liver TC, free cholesterol,
 and cholesterol ester concentrations did not differ. Aortic cholesterol
 ester concentrations were lower in the reduced MW beta-**glucan**
 -fed hamsters. Consumption of either high or reduced MW beta-
glucan increased concentrations of fecal total neutral sterols and
 coprostanol, a cholesterol derivative. Fecal excretion of cholesterol was
 greater than in HCD-fed hamsters only in those fed the reduced MW beta-
glucan. Study results demonstrate that the cholesterol-lowering
 activity of barley beta-**glucan** may occur at both lower and

higher MW.

L2 ANSWER 26 OF 29 MEDLINE on STN
ACCESSION NUMBER: 2002090128 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11815315
TITLE: Postprandial glucose, insulin, and incretin responses to grain products in healthy subjects.
AUTHOR: Juntunen Katri S; Niskanen Leo K; Liukkonen Kirsi H; Poutanen Kaisa S; Holst Jens J; Mykkanen Hannu M
CORPORATE SOURCE: Department of Clinical Nutrition, the University of Kuopio, Kuopio, Finland.. katri.juntunen@uku.fi
SOURCE: The American journal of clinical nutrition, (2002 Feb) Vol. 75, No. 2, pp. 254-62.
Journal code: 0376027. ISSN: 0002-9165.
PUB. COUNTRY: United States
DOCUMENT TYPE: (CLINICAL TRIAL)
Journal; Article; (JOURNAL ARTICLE)
(RANDOMIZED CONTROLLED TRIAL)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 200202
ENTRY DATE: Entered STN: 31 Jan 2002
Last Updated on STN: 13 Feb 2002
Entered Medline: 12 Feb 2002

AB BACKGROUND: Various botanical and structural characteristics of starchy food modify the postprandial glucose and insulin responses in humans. OBJECTIVE: We investigated what factors in grain products affect human glucose and insulin responses and elucidated the mediating mechanisms. DESIGN: Ten men and 10 women [mean age: 28 +/- 1 y; mean body mass index (in kg/m(2)): 22.9 +/- 0.7] with normal glucose tolerance were recruited. The test products were whole-kernel rye bread, whole-meal rye bread containing oat beta-glucan concentrate, dark durum wheat pasta, and wheat bread made from white wheat flour. Paracetamol, a marker of the rate of gastric emptying, was added to the breads during baking. Each product provided 50 g available carbohydrate and was served in random order with breakfast (except for the beta-glucan rye bread, which was served at the last visit). Fasting and 8 postprandial blood samples were collected at intervals of 15-30 min for 3 h to determine plasma glucose, glucose-dependent insulintropic polypeptide (GIP), glucagon-like peptide 1 (GLP-1), serum insulin, and paracetamol concentrations. The in vitro starch hydrolysis, the structural characteristics (by light microscopy), and the molecular weight of beta-glucan in the test products were analyzed. RESULTS: Glucose responses and the rate of gastric emptying after consumption of the 2 rye breads and pasta did not differ from those after consumption of white wheat bread. However, insulin, GIP, and GLP-1 responses, except for GLP-1 responses to the rye bread containing oat beta-glucan concentrate, were lower after the consumption of rye breads and pasta than after consumption of white wheat bread. CONCLUSIONS: Postprandial insulin responses to grain products are determined by the form of food and botanical structure rather than by the amount of fiber or the type of cereal in the food. These effects may be mediated through GIP and GLP-1.

L2 ANSWER 27 OF 29 MEDLINE on STN
ACCESSION NUMBER: 97104228 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8948386
TITLE: Oat bran concentrate bread products improve long-term control of diabetes: a pilot study.
AUTHOR: Pick M E; Hawrysh Z J; Gee M I; Toth E; Garg M L; Hardin R T
CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, Canada.
SOURCE: Journal of the American Dietetic Association, (1996 Dec)

Vol. 96, No. 12, pp. 1254-61.
Journal code: 7503061. ISSN: 0002-8223.

PUB. COUNTRY: United States
DOCUMENT TYPE: (CLINICAL TRIAL)
Journal; Article; (JOURNAL ARTICLE)
(RANDOMIZED CONTROLLED TRIAL)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 199612
ENTRY DATE: Entered STN: 28 Jan 1997
Last Updated on STN: 28 Jan 1997
Entered Medline: 26 Dec 1996

AB OBJECTIVE: To evaluate the long-term effects oat bran **concentrate** bread products in the diet of free-living subjects with non-insulin-dependent diabetes (NIDDM) via dietary, clinical, and biochemical methods. DESIGN: A 24-week crossover study consisting of two 12-week periods. SUBJECTS/SETTING: Eight men with NIDDM (mean age = 45 years) who lived in the community. Glucose and insulin profiles were conducted in a clinical investigation unit. INTERVENTION: Palatable, high-fiber, oat bran **concentrate** (soluble fiber [beta-glucan] content = 22.8%) bread products were developed. Four randomly chosen subjects ate oat bran **concentrate** breads first; the other subjects ate control white bread first. MAIN OUTCOME MEASURES: Dietary intake (four 48-hour dietary recalls per period) was assessed. Blood glucose and insulin (8-hour profiles) and lipid parameters after fasting were measured (at 0, 12, and 24 weeks). STATISTICAL ANALYSES PERFORMED: Analysis of variance and repeated-measures analysis of variance. RESULTS: Total energy and macronutrient intakes were similar in both periods. Mean total dietary fiber intake was 19 g/day in the white bread period and 34 g/day (9 g soluble fiber per day from oat bran **concentrate**) in the oat bran **concentrate** period. Body weight remained stable. Mean glycemic and insulin response areas (area under the curve) were lower ($P < \text{or} = .05$ and not significant, respectively) for the oat bran **concentrate** period than the white bread period. After breakfast, area under the curve for the oat bran **concentrate** period was lower for glucose ($P < \text{or} = .01$) and insulin ($P < \text{or} = .05$); insulin peak was reached earlier ($P < \text{or} = .05$) than in the white bread period. Dietary fiber intake was correlated negatively with insulin area under the curve ($P < \text{or} = .05$). Mean total plasma cholesterol and low-density lipoprotein cholesterol levels were lower ($P < \text{or} = .01$) in the oat bran **concentrate** period than in the white bread period. In the oat bran **concentrate** period, the mean ratio of low-density lipoprotein cholesterol to high-density lipoprotein cholesterol was reduced by 24% ($P < \text{or} = .05$). CONCLUSIONS: The well-accepted oat bran **concentrate** bread products improved glycemic, insulinemic, and lipidemic responses.

L2 ANSWER 28 OF 29 MEDLINE on STN
ACCESSION NUMBER: 94128752 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8297914
TITLE: Effects of oat-bran concentrate on rat serum lipids and liver fat infiltration.
AUTHOR: Malkki Y; Torronen R; Pelkonen K; Myllymaki O; Hanninen O; Syrjanen K
CORPORATE SOURCE: Technical Research Centre of Finland, Food Research Laboratory, Espoo.
SOURCE: The British journal of nutrition, (1993 Nov) Vol. 70, No. 3, pp. 767-76.
Journal code: 0372547. ISSN: 0007-1145.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199403

ENTRY DATE: Entered STN: 18 Mar 1994
Last Updated on STN: 18 Mar 1994
Entered Medline: 10 Mar 1994

AB Oat bran concentrated with respect to both soluble and insoluble dietary fibre was fed to adult rats, and its effects on serum cholesterol and liver fat infiltration were studied. The feeds contained 15, 30 or 45 g beta-glucan/kg, except in control groups where the fibre of the feed was cellulose. Half the experimental groups received the feeds with an addition of 10 g cholesterol and 2 g cholic acid/kg in order to create an hypercholesterolaemic condition. In normocholesterolaemic rats the concentrated oat bran did not cause any significant changes in serum cholesterol concentrations, but reduced liver weight compared with control group rats fed on the cellulose-containing diet. In hypercholesterolaemic rats the concentrated oat bran reduced serum total cholesterol and increased high-density-lipoprotein cholesterol concentration. The effect was seen already at the 15 g/kg concentration of beta-glucan, the higher doses tested did not significantly improve the effect. Infiltration of fat into liver cells, especially in the periportal areas, was observed only in hypercholesterolaemic animals. The fat infiltration was accentuated in proportion to the amount of oat-bran **concentrate** fed.

L2 ANSWER 29 OF 29 MEDLINE on STN
ACCESSION NUMBER: 81117074 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7462159
TITLE: Purification and properties of endo-alpha-1,3-glucanase from a Streptomyces chartreusis strain.
AUTHOR: Takehara T; Inoue M; Morioka T; Yokogawa K
SOURCE: Journal of bacteriology, (1981 Feb) Vol. 145, No. 2, pp. 729-35.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198104
ENTRY DATE: Entered STN: 16 Mar 1990
Last Updated on STN: 16 Mar 1990
Entered Medline: 24 Apr 1981

AB An enzyme hydrolyzing the water-insoluble glucans produced from sucrose by Streptococcus mutans was purified from the culture **concentrate** of Streptomyces chartreusis strain F2 by ion-exchange chromatography on diethylaminoethyl cellulose and carboxymethyl cellulose columns and gel filtration on Bio-Gel A-1.5m. The purification achieved was 6.4-fold, with an overall yield of 27.3%. Electrophoresis of the purified enzyme protein gave a single band on a sodium dodecyl sulfate-polyacrylamide gel slab. Its molecular **weight** was estimated to be approximately 68,000, but there is a possibility that the native enzyme exists in an aggregated form or is an oligomer of the peptide subunits, have a molecular **weight** larger than 300,000. The pH optimum of the enzyme was 5.5 to 6.0, and its temperature optimum was 55 degrees C. The enzyme lost activity on heating at 65 degrees C for 10 min. The enzyme activity was completely inhibited by the presence of 1 mM Mn2+, Hg2+, Cu2+, Ag2+, or Merthiolate. The Km value for the water-insoluble **glucan** of S. mutans OMZ176 was an amount of **glucan** equivalent to 1.54 mM glucose, i.e., 0.89 mM in terms of the alpha-1,3-linked glucose residue. The purified enzyme was specific for glucans containing an alpha-1,3-glucosidic linkage as the major bond. The enzyme hydrolyzed the S. mutans water-insoluble glucans endolytically, and the products were oligosaccharides. These results indicate that the enzyme elaborated by S. chartreusis strain F2 is an endo-alpha-1,3-glucanase (EC 3.2.1.59).

L2 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1152522 CAPLUS

DOCUMENT NUMBER: 144:107182

TITLE: The influence of α -amylase-hydrolysed barley starch fractions on the viscosity of low and high purity barley β -glucan concentrates

AUTHOR(S): Faraj, A.; Vasanthan, T.; Hoover, R.

CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, T6G 2P5, Can.

SOURCE: Food Chemistry (2005), Volume Date 2006, 96(1), 56-65
CODEN: FOCHDJ; ISSN: 0308-8146

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Gelatinized barley starch was hydrolyzed using porcine pancreatic α -amylase for various time intervals and the hydrolyzate fractionated according to mol. wt. distribution (low, medium and high) by gel permeation chromatog. The effects of hydrolyzed starch fractions (2.5%, wt./wt.) on the solution viscosity of low- (.apprx.50%, wt./wt.) and high- (.apprx.88%, wt./wt.) purity barley β -glucan (0.75%, wt./wt.,) at different temps. (20 and 37 °C) were determined and compared to that of a control. The results indicated that none of the hydrolyzed starch fractions significantly influenced the solution viscosity of high purity β -glucan. However, addition of the medium mol. wt. fraction to low purity β -glucan significantly increased its viscosity when determined at low shear rates (1.29-12.9 s⁻¹). Marginal changes in viscosity were observed at shear rates exceeding 12.9 s⁻¹. This study suggested that a non- β -glucan component in the low purity β -glucan conc. probably influences the solution viscosity of " β -glucan -hydrolyzed starch" blends.

REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:735716 CAPLUS

TITLE: Physicochemical properties of bioactive beta-glucan compositions with starch-lipid interactions

AUTHOR(S): Stevenson, David G.; Eller, Fred J.; Radosavljevic, Milica; Jane, Jay-lin; Inglett, George E.

CORPORATE SOURCE: Cereal Products and Food Science Research Unit, National Center for Agricultural Utilization Research, USDA/ARS, Peoria, IL, 61604, USA

SOURCE: Abstracts of Papers, 230th ACS National Meeting, Washington, DC, United States, Aug. 28-Sept. 1, 2005 (2005), AGFD-058. American Chemical Society: Washington, D. C.
CODEN: 69HFCL

DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)

LANGUAGE: English

AB To incorporate health-beneficial oat beta-glucans into foods, a concentrated beta-glucan ingredient could be useful. This study investigates the physicochem. properties of oat bran conc. (OBC) and enriched beta-glucan oat products, Nutrim-OB and C-trim30 with and without lipids extracted by supercrit. CO₂ (SCC). Rapid ViscoAnalyzer anal. of pasting properties showed both Nutrim-OB and C-trim30 had higher peak, final and setback viscosity compared to OBC, with SCC resulting in increased viscosity. Water retention measured by thermogravimetric anal. showed heated C-trim30 retained greater proportion of moisture than Nutrim-OB, with both beta-glucan enriched products retaining

more water than OBC. SCC decreased water retention for all oat **beta-glucan** products. Differential scanning calorimetry (DSC) anal. of oat products heated to 150°C showed three thermal transitions for OBC, with starch gelatinization transition absent in Nutrim-OB and no thermal transitions observed in C-trim30. HPSEC anal. showed C-trim30 had reduction in average amylopectin mol. wt. and increase in lower mol. wt. compds. compared to Nutrim-OB and OBC. Study shows that the enriched oat **beta-glucan** products with and without SCC have modified functional properties for potential expanded uses in foods.

L2 ANSWER 3 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:849067 CAPLUS
 DOCUMENT NUMBER: 142:73910
 TITLE: Reduced and high molecular **weight** barley β -glucans decrease plasma total and non-HDL-cholesterol in hypercholesterolemic Syrian Golden hamsters
 AUTHOR(S): Wilson, Thomas A.; Nicolosi, Robert J.; Delaney, Bryan; Chadwell, Kim; Moolchandani, Vikas; Kotyla, Timothy; Ponduru, Sridevi; Zheng, Guo-Hua; Hess, Richard; Knutson, Nathan; Curry, Leslie; Kolberg, Lore; Goulson, Melanie; Ostergren, Karen
 CORPORATE SOURCE: Center for Health and Disease Research, Department of Health and Clinical Sciences, University of Massachusetts-Lowell, Lowell, MA, 01854, USA
 SOURCE: Journal of Nutrition (2004), 134(10), 2617-2622
 CODEN: JONUAI; ISSN: 0022-3166
 PUBLISHER: American Society for Nutritional Sciences
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Consumption of concentrated barley **β -glucan** lowers blood plasma cholesterol levels because of its soluble dietary fiber nature. The role of **β -glucan** mol. wt. (MW) in lowering blood serum cholesterol levels is not clear. Earlier studies show that enzymic degradation of **β -glucan** eliminates the cholesterol-lowering activity, but these studies did not evaluate the **β -glucan** MW. This study evaluated whether barley **β -glucan** **concs.**, partially hydrolyzed to decrease MW, have cholesterol-lowering and antiatherogenic activities. The decreased-MW fraction was compared with high-MW **β -glucan conc.** from the same barley flour. The concentrated **β -glucan** preps. were evaluated in Syrian Golden F1B hamsters fed hypercholesterolemic diet (HCD) with cholesterol, hydrogenated coconut oil, and cellulose. After 2 wk, the hamsters were switched to HCD without or with high-MW or decreased-MW **β -glucan** added at 8 g/100 g feed at the expense of cellulose. Decreases in plasma total cholesterol (TC) and non-HDL-cholesterol (non-HDL-C) **concs.** occurred in hamsters fed decreased-MW and high-MW **β -glucan** diets. Plasma HDL-C **concs.** did not differ. HCD-fed hamsters had higher plasma triglyceride **concs.** Liver TC, free cholesterol, and cholesterol ester **concs.** did not differ. Aortic cholesterol ester **concs.** were lower in the decreased-MW **β -glucan**-fed hamsters. Either **β -glucan** increased the **concs.** of fecal total neutral sterols and coprostanol (cholesterol derivative). Fecal excretion of cholesterol was greater than in HCD-fed hamsters only in those fed the decreased-MW **β -glucan**. Thus, the cholesterol-lowering activity of barley **β -glucan** may occur at both lower and higher MW.

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 4 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:664557 CAPLUS
 DOCUMENT NUMBER: 141:379158
 TITLE: Dietary fibre in fermented oat and barley **β -**

glucan rich concentrates
AUTHOR(S): Lambo, Adele M.; Oste, Rickard; Nyman, Margareta E. G.-L.
CORPORATE SOURCE: Applied Nutrition and Food Chemistry, Center for Chemistry and Chemical Engineering, Lund University, Lund, SE-221 00, Swed.
SOURCE: Food Chemistry (2005), 89(2), 283-293
CODEN: FOCHDJ; ISSN: 0308-8146
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The ability of different lactic acid bacteria to influence the physicochem. characteristics (content, viscosity and mol. wt.) of dietary fiber in β - **glucan**-rich barley and oat **concs.** was investigated. The cultures used were Lactobacillus acidophilus and the exopolysaccharide producing strain Pediococcus damnosus 2.6, together with the yogurt culture, V2 (a mixture (1:1) of Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus salivarius subsp. thermophilus). Two methodologies, one including filtration and another centrifugation-dialysis, to quantify the dietary fiber, were compared. The centrifugation-dialysis method generally gave significantly ($P < 0.05$) higher values than the filtration method (for example, 79.8 g/100 g DW vs. 59.6 g/100 g DW for the total fiber in the native barley fiber **conc.**) with the exception of soluble barley fibers. The insol. fiber content was found to decrease after fermentation (58.8 g/100 g DW to 39.0/37.0 g/100 g DW in barley and 26.0 g/100 g DW to 4.5/3.0 g/100 g DW in oats as analyzed by the centrifugation-dialysis method). The soluble fiber in the barley fiber **conc.** was apparently not affected by fermentation, while contents and maximum viscosities of the soluble fiber in oat fiber **concs.** decreased after fermentation. However, the mol. wt. was apparently not affected.

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:603553 CAPLUS
DOCUMENT NUMBER: 141:331090
TITLE: Development of an orange-flavored barley β -glucan beverage
AUTHOR(S): Temelli, Feral; Bansema, Craig; Stobbe, Kim
CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, T6G 2P5, Can.
SOURCE: Cereal Chemistry (2004), 81(4), 499-503
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The objectives of this study were to formulate a functional beverage utilizing barley β - **glucan conc.**, and to make a sensory evaluation of beverage quality in comparison to pectin beverages and to assess shelf stability over 12 wk. Three beverage treatments containing 0.3, 0.5, and 0.7% (wt./wt.) barley β - **glucan** were developed in triplicate. Trained panelists found peely- and fruity-orange aroma and sweetness intensity to be similar ($P > 0.05$) for all beverages tested. Beverage sourness intensity differed among beverages ($P \leq 0.05$). Panelists evaluated beverages containing 0.3% hydrocolloid as similar ($P > 0.05$), whereas beverages with 0.5 and 0.7% β - **glucan** were more viscous ($P \leq 0.05$) than those with pectin at these levels. Acceptability of beverages was similar according to the consumer panel. Shelf stability studies showed no microbial growth and stable pH for all beverages over 12 wk. Colorimeter values for most beverages decreased ($P \leq 0.05$) during the first week of storage, mostly stabilizing thereafter. With an increase in

concentration, β - **glucan** beverages became lighter in color ($P \leq 0.05$) and cloudier, but these attributes for pectin beverages were not affected ($P > 0.05$). β - **Glucan** beverages exhibited cloud loss during the first three weeks of storage. β - **Glucan** can therefore be successfully utilized in the production of a functional beverage acceptable to consumers.

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:393644 CAPLUS

DOCUMENT NUMBER: 141:139338

TITLE: Molecular **weight** distribution of β -glucan in oat-based foods

AUTHOR(S): Aman, Per; Rimsten, Lena; Andersson, Roger

CORPORATE SOURCE: Department of Food Science, Swedish University of Agricultural Sciences, Uppsala, 750 07, Swed.

SOURCE: Cereal Chemistry (2004), 81(3), 356-360

CODEN: CECHAF; ISSN: 0009-0352

PUBLISHER: American Association of Cereal Chemists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Oats, different oat fractions as well as exptl. and com. oat-based foods, were extracted with hot water containing thermostable α -amylase. Average mol. wt. and mol. wt. distributions of β - **glucan** in exts. were analyzed with a calibrated high-performance size-exclusion chromatog. system with Calcofluor detection, specific for the β - **glucan**. Oats, rolled oats, oat bran, and oat bran **concs** . all had high Calcofluor average mol. **wts**. (206+104 to 230+104 g/mol) and essentially monomodal distributions. Of the oat-containing exptl. foods, extruded flakes, macaroni, and muffins all had high average mol. **wts**. Pasteurized apple juice, fresh pasta, and teacake, on the other hand, contained degraded β - **glucan**. Calcofluor average mol. **wts**. varied from 24+104 to 167+104 g/mol in different types of oat bran-based breads baked with almost the same ingredients. Large particle size of the bran and short fermentation time limited the β - **glucan** degradation during baking. The polymodal distributions of β - **glucan** in these breads indicated that this degradation was enzymic in nature. Com. oat foods also showed large variation in Calcofluor average mol. **wt**. (from 19+104 g/mol for pancake batter to 201+104 g/mol for porridge). Boiling porridge or frying pancakes did not result in any β - **glucan** degradation. These large differences in mol. **wt**. distribution for β - **glucan** in different oat products are very likely to be of nutritional importance.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:1002199 CAPLUS

DOCUMENT NUMBER: 140:390531

TITLE: Effects of a commercial oat- β - **glucan** **concentrate** on the chemical, physico-chemical and sensory attributes of a low-fat white-brined cheese product

AUTHOR(S): Volikakis, Pantelis; Biliaderis, Costas G.; Vamvakas, Costas; Zerfiridis, Gregory K.

CORPORATE SOURCE: School of Agriculture, Department of Food Science and Technology, Laboratory of Food Chemistry and Biochemistry, Aristotle University, Thessaloniki, 54006, Greece

SOURCE: Food Research International (2004), 37(1), 83-94

CODEN: FORIEU; ISSN: 0963-9969

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
LANGUAGE: English

AB Low-fat white-brined cheese was manufactured by a traditional procedure from bovine milk (70% fat reduction) containing two levels of an oat β -glucan conc. (CEBA Foods AB) at 0.7% and 1.4% (wt./wt.). For comparison two controls - a full-fat and a low-fat product without addition of the β -glucan conc. - were also examined. The results indicated that as the fat content of cheese milk decreased, the fat, moisture in non-fat solids (MNFS) and yield values significantly decreased, and the moisture and total nitrogen values increased. The products fortified with the β -glucan conc. exhibited higher yield values and significantly lower pH (at 60 and 90 days of storage) than the control samples. In accordance with the latter values, the HPLC anal. showed that incorporation of the β -glucan conc. into the low-fat cheese milk led to a significant increase in the production of lactic, acetic and butyric acid throughout cheese ripening. Also, the extent of proteolysis in the treatments supplemented with the hydrocolloid significantly increased, especially at 60 and 90 days and was higher than the resp. values of the control products. With regard to the rheol. properties of the cheeses, incorporation of the β -glucan conc. brought about amelioration in all the textural parameters of the low-fat product, as determined by large deformation mech. testing and sensorial anal.; significant correlations ($p < 0.01$) between instrumental and sensory data for hardness were identified. However, the addition of the β -glucan preparation adversely affected cheese appearance and flavor in comparison with the control samples.

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 8 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:921338 CAPLUS

DOCUMENT NUMBER: 139:380727

TITLE: Preparations containing β -glucan and sorbates, and their use for feeds and feed additives

INVENTOR(S): Raczek, Nico, N.; Ter Meer, Hans-Ulrich

PATENT ASSIGNEE(S): Nutrinova Nutrition Specialties and Food Ingredients G.m.b.H., Germany

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003334001	A2	20031125	JP 2003-142001	20030520
DE 10222358	A1	20031211	DE 2002-10222358	20020521
US 2003219468	A1	20031127	US 2003-436556	20030513
ZA 2003003767	A	20040203	ZA 2003-3767	20030515
AU 2003204291	A1	20031211	AU 2003-204291	20030520

PRIORITY APPLN. INFO.: DE 2002-10222358 A 20020521

AB The prepn.s., useful for feeds and feed additives for animal breeding, contain sorbic acid (I) and/or sorbates and bioavailable β -glucan (II). An oat bran conc. (II content 15 wt.%) (1 kg) was mixed with 0.5 kg I, and 300 g of the mixture was added to 10 kg feed to give a feed composition, which promoted the growth of young pigs.

L2 ANSWER 9 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:88484 CAPLUS

DOCUMENT NUMBER: 136:278660

TITLE: Postprandial glucose, insulin, and incretin responses

to grain products in healthy subjects

AUTHOR(S): Juntunen, Katri S.; Niskanen, Leo K.; Liukkonen, Kirsi H.; Poutanen, Kaisa S.; Holst, Jens J.; Mykkanen, Hannu M.

CORPORATE SOURCE: Department of Clinical Nutrition, The University of Kuopio, Kuopio, 70211, Finland

SOURCE: American Journal of Clinical Nutrition (2002), 75(2), 254-262

CODEN: AJCNAC; ISSN: 0002-9165

PUBLISHER: American Society for Clinical Nutrition

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Background: Various botanical and structural characteristics of starchy food modify the postprandial glucose and insulin responses in humans. Objective: We investigated what factors in grain products affect human glucose and insulin responses and elucidated the mediating mechanisms. Design: Ten men and 10 women [mean age: 28 1 y: mean body mass index (in kg/m²): 22.9 0.7] with normal glucose tolerance were recruited. The test products were whole-kernel rye bread, whole-meal rye bread containing oat -**glucan conc.**, dark durum wheat pasta, and wheat bread made from white wheat flour. Paracetamol, a marker of the rate of gastric emptying, was added to the breads during baking. Each product provided 50 g available carbohydrate and was served in random order with breakfast (except for the -**glucan** rye bread, which was served at the last visit). Fasting and 8 postprandial blood samples were collected at intervals of 15-30 min for 3 h to determine plasma glucose, glucose-dependent insulinitropic polypeptide (GIP), glucagon-like peptide 1 (GLP-1), serum insulin, and paracetamol concs. The in vitro starch hydrolysis, the structural characteristics (by light microscopy), and the mol. wt . of -**glucan** in the test products were analyzed. Results: Glucose responses and the rate of gastric emptying after consumption of the 2 rye breads and pasta did not differ from those after consumption of white wheat bread. However, insulin, GIP, and GLP-1 responses, except for GLP-1 responses to the rye bread containing oat -**glucan conc** ., were lower after the consumption of rye breads and pasta than after consumption of white wheat bread. Conclusions: Postprandial insulin responses to grain products are determined by the form of food and botanical structure rather than by the amount of fiber or the type of cereal in the food. These effects may be mediated through GIP and GLP-1.

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 10 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:834263 CAPLUS

DOCUMENT NUMBER: 136:101482

TITLE: Barley β -glucan and beer foam stability

AUTHOR(S): Lusk, Lance T.; Duncombe, George R.; Kay, Susan B.; Navarro, Alfonso; Ryder, David

CORPORATE SOURCE: Miller Brewing Company, Milwaukee, WI, 53208, USA

SOURCE: Journal of the American Society of Brewing Chemists (2001), 59(4), 183-186

CODEN: JSBCD3; ISSN: 0361-0470

PUBLISHER: American Society of Brewing Chemists, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Barley β - **glucan** was examined as a potential foam-enhancing or foam-stabilizing beer component. Neither foam enhancement nor foam stabilization was observed Treating beer with β -glucanase did not alter the foam properties. β - **Glucan** did not **conc.** in foam collected by the foam tower method from a European Pilsner-style beer with a relatively high known β - **glucan** content. β - **Glucan** mol. wt. fractionation was not observed β - **Glucan** did not have independent foam stability when tested in a model beer system.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:598213 CAPLUS
DOCUMENT NUMBER: 134:55763
TITLE: Flow behavior and functional properties of barley and oat water-soluble β -D-glucan rich extractions
AUTHOR(S): Tejinder, S.; Bhupinder, K.; Harinder, K.
CORPORATE SOURCE: Department of Food Science and Technology, Punjab Agricultural University, Ludhiana, 141004, India
SOURCE: International Journal of Food Properties (2000), 3(2), 259-274
CODEN: IJFPFO; ISSN: 1094-2912
PUBLISHER: Marcel Dekker, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Flow characteristics and functional properties of water-soluble β -glucan rich extns. prepared from hulled barley, hullless barley and oats were investigated. Rheol. behavior was studied using a coaxial viscometer over shear rates of 3.0-1312 s⁻¹. The shear rate-shear stress data followed the power law and Herschel-Bulkley models. The flow behavior index values varied from 0.31-0.97, indicating mildly to highly pseudoplastic nature of the aqueous solns. of β -glucan rich extns. The pseudoplasticity for the aqueous solns. increased with increasing concentration of extns. The hullless barley β -glucan rich extns. showed higher pseudoplasticity, consistency index, and yield stress values; absorbed less water and exhibited higher fat absorption and oil emulsifying properties than those of the hulled barley and oats. There was no discernible influence of fat content on functional properties of the concs. Dough development time, arrival time, stability and softening of the dough were negligibly affected with addition of various β -glucan rich extns. to the flours. Supplementation of β -glucan rich extns. desirably increased the baking absorption of the flours. Bread with improved loaf quality could be obtained using various β -glucan rich extns. up to a level of 1.00% (wt./wt.), especially, from those of hullness barley cv. PNB 5.

REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 12 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:592751 CAPLUS
DOCUMENT NUMBER: 133:179211
TITLE: Isolated water-soluble polysaccharide films or concentrates and preparation and uses thereof
INVENTOR(S): Potter, Richard C.; Fisher, Philip A.; Hash, Kirk R., Sr.; Neidt, John D.
PATENT ASSIGNEE(S): Nuture, Inc., USA
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000049052	A2	20000824	WO 2000-US3886	20000215
WO 2000049052	A3	20001228		

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,

SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6323338	B1	20011127	US 1999-252356	19990217
US 6485945	B1	20021126	US 1999-444214	19991119
CA 2361308	AA	20000824	CA 2000-2361308	20000215
EP 1155042	A2	20011121	EP 2000-911826	20000215
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AU 770140	B2	20040212	AU 2000-33656	20000215
US 2004049026	A1	20040311	US 2003-659941	20030911
AU 2004202019	A1	20040610	AU 2004-202019	20040512
PRIORITY APPLN. INFO.:			US 1999-252356	A 19990217
			US 1999-444214	A 19991119
			WO 2000-US3886	W 20000215
			US 2001-921846	A1 20010802

AB An entirely aqueous method for concentrating water-soluble polysaccharides, especially

β -glucan, having mol. wts. \geq apprx. 50 kDa comprises forming a film by evaporating aqueous polysaccharide solns. until a surface film

forms and harvesting the polysaccharide-enriched film. The polysaccharide can be of plant or animal origin, and includes polysaccharides such as guar gum, xanthan gum and pectin. The isolated polysaccharides are useful in food products, pharmaceutical compns., and cosmetic compns. (no data). Thus, a 10% solids water slurry of 50 lb flour from milled com. oat bran was pumped to a vibratory screen with an overhead water spray, the oversized material was fed to an extractor fitted with a propeller agitator, water was added to 100 gal, the mixture extracted 2 h at 60° and pH 10, centrifuged, the supernatant heated 15 min at 80° and pH 4, and cooled to <30°, giving a solution containing 0.72% solids and 42.9% β -glucan. The solution (3 in.) was placed in a steam-heated 23 in. x 48 in. x 7 in. tray at 87°, with skins harvested every 15 min, with >2 dozen skins taken. The skins were combined and dried, giving β -glucan concentration 67.5%.

L2 ANSWER 13 OF 29 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:403194 CAPLUS

DOCUMENT NUMBER: 129:108194

TITLE: Barley β -glucan is effective as a hypocholesterolemic ingredient in foods

AUTHOR(S): Hecker, Kari D.; Meier, Mary L.; Newman, Rosemary K.; Newman, C. Walter

CORPORATE SOURCE: Dept. of Plant, Soil and Environmental Sciences, Montana State Univ., Bozeman, MT, 59717, USA

SOURCE: Journal of the Science of Food and Agriculture (1998), 77(2), 179-183

CODEN: JSFAAE; ISSN: 0022-5142

PUBLISHER: John Wiley & Sons Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Barley contains high levels of soluble dietary fiber, including mixed linked 1 \rightarrow 3, 1 \rightarrow 4 β -D-glucans (β -glucan). An extract of β -glucan from waxy, hullless barley containing 56% total dietary fiber (TDF) was incorporated into flour tortillas, cornstarch pudding and apple granola bars to provide 2 g soluble fiber as β -glucan per serving. The foods were tested for objective functional properties. Flour tortillas with β -glucan were incorporated into rat diets and compared to diets containing an equivalent amount of cellulose, to test the fiber effect on growth and lipid metabolism parameters. Rats fed β -glucan tortillas had lower feed consumption and body wt. (P < 0.05) compared to those fed the cellulose

tortillas, although feed/gain ratios were not different ($P > 0.05$). Plasma LDL-cholesterol of rats fed β - **glucan** was lower ($P < 0.05$) than cellulose-fed controls, although total cholesterol and triglycerides did not differ ($P > 0.05$). Rats fed β - **glucan** tortillas had higher ($P < 0.05$) fecal fat excretion, suggesting impairment of intestinal fat absorption. Liver composition data showed lower ($P < 0.05$) levels of total lipid and cholesterol in β - **glucan**-fed rats. The results suggest that the barley β - **glucan conc** . has potential as a food ingredient to provide supplemental soluble fiber which may be beneficial in reducing plasma LDL-cholesterol in humans.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1032953 CAPLUS
 DOCUMENT NUMBER: 144:411392
 TITLE: The use of cereal beta-glucans to control diabetes and cardiovascular disease
 AUTHOR(S): Oenning, G.
 CORPORATE SOURCE: Biomedical Nutrition Center for Chemistry and Chemical Engineering, Lund University, Lund, SE-221 00, Swed.
 SOURCE: Functional Foods, Cardiovascular Disease and Diabetes (2004), 402-421. Editor(s): Arnoldi, Anna. Woodhead Publishing Ltd.: Cambridge, UK.
 CODEN: 69HIJ3; ISBN: 1-85573-735-3
 DOCUMENT TYPE: Conference; General Review
 LANGUAGE: English
 AB A review on the development of new food products enriched with beta-glucans. It discusses current limitation in using beta-glucans as food ingredients and different available beta-glucan **concs**. It discusses the effects of beta-glucan on the lipid and glucose metabolism, and new techniques (nutrigenomics) to evaluate the health effects of beta-glucans.
 REFERENCE COUNT: 80 THERE ARE 80 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:817929 CAPLUS
 DOCUMENT NUMBER: 141:295032
 TITLE: Preparation of high viscosity beta-glucan **concentrates** from cereal grain products by sonication and enzyme methods
 INVENTOR(S): Vasanthan, Thava; Temelli, Feral; Burkus, Zvonko
 PATENT ASSIGNEE(S): The Governors of the University of Alberta, Can.
 SOURCE: PCT Int. Appl., 31 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004085484	A1	20041007	WO 2004-CA416	20040319
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
CA 2423711	AA	20040927	CA 2003-2423711	20030327
AU 2004224252	A1	20041007	AU 2004-224252	20040319
EP 1615958	A1	20060118	EP 2004-721785	20040319
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK			
CN 1764672	A	20060426	CN 2004-80008307	20040319
PRIORITY APPLN. INFO.:			CA 2003-2423711	A 20030327
			US 2003-397215	A 20030327
			WO 2004-CA416	W 20040319

AB This invention relates to methods for secondary processing of plant material and in particular for the recovery of valuable products such as

fiber including beta-glucan, starch, and ethanol solubles from plant material containing starch and fiber. In particular, the invention relates to the preparation of high viscosity beta-glucan products through methods involving sonication/sonification and enzymes.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:3490 CAPLUS

DOCUMENT NUMBER: 140:58738

TITLE: Preparation of high viscosity beta-glucan concentrates

INVENTOR(S): Vasanthan, Thava; Temelli, Feral; Burkus, Zvonko

PATENT ASSIGNEE(S): Can.

SOURCE: U.S. Pat. Appl. Publ., 10 pp., Cont.-in-part of Appl. No. PCT/CA01/01358.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004001907	A1	20040101	US 2003-397215	20030327
WO 2002027011	A2	20020404	WO 2001-CA1358	20010926
WO 2002027011	A3	20031002		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

CA 2423711 AA 20040927 CA 2003-2423711 20030327

PRIORITY APPLN. INFO.: WO 2001-CA1358 A2 20010926

CA 2000-2321315 A 20000927

CA 2001-2345606 A 20010426

US 2003-397215 A 20030327

AB This invention relates to methods for secondary processing of plant material and in particular for the recovery of valuable products such as fiber including beta-glucan, starch, and ethanol solubles from plant material containing starch and fiber. In particular, the invention relates to the preparation of high viscosity beta-glucan products through methods involving sonication/sonification and enzymes.

L4 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:253017 CAPLUS

DOCUMENT NUMBER: 139:185300

TITLE: Analytical research for standardizing bioproducts with therapeutic and dermatocosmetic use, obtained from wheat and oats

AUTHOR(S): Tilica, M.; Zglimbea, L.; Ion, E.; Docu, N.; Turcanu, L.

CORPORATE SOURCE: S.C. BIOTEHNOS S.A., Bucharest, Rom.

SOURCE: COFrRoCA 2002, Actes du Colloque Franco-Roumain de Chimie Appliquee, 2nd, Bacau, Romania, Oct. 10-12, 2002 (2002), 161-162. Editor(s): Gavrilă, Lucian; Finaru, Adriana; Grandclaudon, Pierre. University of Bacau: Bacau, Rom.

CODEN: 69DSIC; ISBN: 973-8392-04-7

DOCUMENT TYPE: Conference
LANGUAGE: French
AB Products obtained from wheat bran and oat bran (oils, liquid products stabilized with propylene glycol, lyophilized β -glucan concs.) contained a large number of bioactive components (amino acids, water-soluble vitamins of the B complex, fatty acids, steroidal saponins) that justify therapeutic and cosmetic utilization.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:380183 CAPLUS
DOCUMENT NUMBER: 131:157055
TITLE: Gelation of barley β -glucan concentrate
AUTHOR(S): Burkus, Z.; Temelli, F.
CORPORATE SOURCE: Dept. of Agricultural, Food & Nutritional Science, Univ. of Alberta, Edmonton, AB, T6G 2P5, Can.
SOURCE: Journal of Food Science (1999), 64(2), 198-201
CODEN: JFDSA3; ISSN: 0022-1147
PUBLISHER: Institute of Food Technologists
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The gel behavior of barley β -glucan (BBG) gum extracted in our laboratory was compared to low- and high-viscosity com. BBG gum and cornstarch using compression between parallel plates. Effects of β -glucan concentration and hydration temperature on gel behavior were examined BBG gum gelled at $\geq 5\%$ concentration and gel strength increased ($p \leq 0.05$), but not proportionally, with concentration Hydration temperature did not influence gel strength. Com. β -glucan had higher ($p \leq 0.05$) gel strength than th BBG gum at 5% concentration Cornstarch produced .apprx.78% softer gel than BBG gum at 6% concentration BBG may have potential as a gelling agent.
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 2003056439 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12566485
TITLE: Beta-glucan fractions from barley and oats are similarly antiatherogenic in hypercholesterolemic Syrian golden hamsters.
AUTHOR: Delaney Bryan; Nicolosi Robert J; Wilson Thomas A; Carlson Ting; Frazer Scott; Zheng Guo-Hua; Hess Richard; Ostergren Karen; Haworth James; Knutson Nathan
CORPORATE SOURCE: Cargill Health and Food Technologies, Wayzata, MN 55391, USA.
SOURCE: The Journal of nutrition, (2003 Feb) Vol. 133, No. 2, pp. 468-75.
Journal code: 0404243. ISSN: 0022-3166.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200302
ENTRY DATE: Entered STN: 5 Feb 2003
Last Updated on STN: 26 Feb 2003
Entered Medline: 25 Feb 2003

AB The cholesterol-lowering activities of oats and barley are commonly attributed to the beta-glucan fractions. Although beta-glucan is present in both grains and appears to be chemically similar, the effect of source on cholesterol-lowering activity has not been evaluated. In the present study, the antiatherogenic properties of beta-glucan concentrates from oats and barley were evaluated in Syrian golden F(1)B hamsters consuming a semipurified hypercholesterolemic diet (HCD)

containing cholesterol (0.15 g/100 g), hydrogenated coconut oil (20 g/100 g) and cellulose (15 g/100 g). After a 2-wk lead-in period, control hamsters were fed the HCD, whereas experimental hamsters consumed HCD formulated to include beta-glucan (2, 4, or 8 g/100 g) by addition of **beta-glucan concentrate** prepared from oats or barley at the expense of cellulose. Compared with control hamsters, dose-dependent decreases that were similar in magnitude in plasma total and LDL cholesterol concentrations were observed in hamsters fed beta-glucan from either source at wk 3, 6 and 9. Compared with controls, liver cholesterol concentrations were also reduced ($P < 0.05$) in hamsters consuming 8 g/100 g oat or barley beta-glucan. In agreement with previously proposed mechanisms, total fecal neutral sterol concentrations were significantly increased ($P < 0.05$) in hamsters consuming 8 g/100 g barley or oat beta-glucan. Aortic cholesterol ester concentrations were significantly reduced ($P < 0.05$) in hamsters fed 8 g/100 g beta-glucan from barley or oats. Although aortic total cholesterol and cholesterol ester concentrations were significantly correlated with LDL cholesterol ($r = 0.565$, $P < 0.004$ and $r = 0.706$, $P < 0.0001$, respectively), this association could explain only half of the variability. This study demonstrated that the cholesterol-lowering potency of beta-glucan is approximately identical whether its origin was oats or barley.

L9 ANSWER 1 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:197082 CAPLUS
DOCUMENT NUMBER: 144:349384
TITLE: Extraction, fractionation, structural and physical
characterization of wheat β -D-glucans
AUTHOR(S): Li, Wei; Cui, Steve W.; Kakuda, Yukio
CORPORATE SOURCE: Food Research Program, Agriculture and Agri-Food
Canada, Guelph, ON, N1G 5C9, Can.
SOURCE: Carbohydrate Polymers (2006), 63(3), 408-416
CODEN: CAPOD8; ISSN: 0144-8617
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A high purity wheat β -D- glucan (91.58%) was
obtained from white wheat bran after alkali extraction and multi-precipitation
with

ammonium sulfate compared to previous reported purity of only
70%. The mol. wt. (Mw) of the purified wheat β -D-
glucan was 487,000 g/mol with a broad Mw distribution
(polydispersity is Mw/Mn = 1.65). By applying an ammonium sulfate gradient
precipitation method, the purified wheat β -D- glucan was
fractionated into 6 fractions with Mw ranged from 43,000 to 758,000 g/mol
and much narrower Mw distribution (polydispersity is Mw/Mn = 1.03 to 1.26).
Structural anal. revealed that there were no significant differences
between the 6 fractions and between the fractions and the original sample.
This set of sample was used to investigate the effect of Mw on phys.
properties of wheat β -D- glucan. Dynamic rheometry and
scanning calorimetric studies revealed that the gelation rate and the
melting enthalpy (ΔH) of wheat β -D- glucan increased
with the decrease of mol. wt. indicating smaller wheat β -D-
glucan mols. (must be above a min. Mw) is easier to form junction
zones and establish stronger 3D network due to their high mobility and
structural regularity (high ratio of tri/tetra). In contrast, the melting
temperature of wheat β -D- glucan gels increased with the increase
of mol. wt., suggesting a more extended structural network was
formed for high Mw wheat β -D-glucans.

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:195376 CAPLUS
TITLE: Purification and chemical characterisation of
laminaran from Eisenia bicyclic in Korea
AUTHOR(S): Kim, Young-Myoung; Choi, Yong-Seok; Park, Jong-Hyuk
CORPORATE SOURCE: Korea Food Research Institute, Gyeonggi, 463-746, S.
Korea
SOURCE: Han'guk Sikk'um Yongyang Kwahak Hoechi (2006), 35(1),
78-86
CODEN: HSYHFB; ISSN: 1226-3311
PUBLISHER: Korean Society of Food Science and Nutrition
DOCUMENT TYPE: Journal
LANGUAGE: Korean

AB Laminarans with different purity were prepared from Eisenia
bicyclis and their structures were characterized. Crude laminaran was
successively extracted two times at room temperature for 2 h with 0.09 N HCl,
and

partially purified laminaran was isolated using cetylpyridinium chloride
(CPC). Crude laminaran accounted for 14.5% of the dry seaweed wt
. and contained 8.4% protein, 7.6% sulfate and 68.2% polysaccharide.
Partially purified laminaran accounted for 6.5% of the dry algal
wt. and composed of 3.8% protein, 3.2% sulfate and 74.7% total
sugar, which is mainly composed of glucose (83.3%), indicating that
partially purified laminaran was more purified polysaccharide than crude

laminaran. Purified laminaran was fractionated into one fractions by Sephacryl S-300 HR column chromatog. and this fraction was analyzed by FT-IR, ¹³C NMR, methylation and gel filtration chromatog. Purified laminaran showed β -configuration (¹³C: 103.0 ppm, FT-IR: 888 cm⁻¹) in the anomerization of the glycosidic linkages and was (1 \rightarrow 3), (1 \rightarrow 6) linked β - **glucan**. The average mol. wt. of purified laminaran was 12,600 dalton.

L9 ANSWER 3 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1152522 CAPLUS

DOCUMENT NUMBER: 144:107182

TITLE: The influence of α -amylase-hydrolysed barley starch fractions on the viscosity of low and high **purity** barley β - **glucan** concentrates

AUTHOR(S): Faraj, A.; Vasanthan, T.; Hoover, R.

CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, T6G 2P5, Can.

SOURCE: Food Chemistry (2005), Volume Date 2006, 96(1), '56-65
CODEN: FOCHDJ; ISSN: 0308-8146

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Gelatinized barley starch was hydrolyzed using porcine pancreatic α -amylase for various time intervals and the hydrolyzate fractionated according to mol. wt. distribution (low, medium and high) by gel permeation chromatog. The effects of hydrolyzed starch fractions (2.5%, wt./wt.) on the solution viscosity of low- (.apprx.50%, wt./wt.) and high- (.apprx.88%, wt./wt.) **purity** barley β - **glucan** (0.75%, wt./wt.,) at different temps. (20 and 37 °C) were determined and compared to that of a control. The results indicated that none of the hydrolyzed starch fractions significantly influenced the solution viscosity of high **purity** β - **glucan**. However, addition of the medium mol. wt. fraction to low **purity** β - **glucan** significantly increased its viscosity when determined at low shear rates (1.29-12.9 s⁻¹). Marginal changes in viscosity were observed at shear rates exceeding 12.9 s⁻¹. This study suggested that a non- β - **glucan** component in the low **purity** β - **glucan** concentrate probably influences the solution viscosity of " β - **glucan**-hydrolyzed starch" blends.

REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 4 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:61170 CAPLUS

DOCUMENT NUMBER: 143:96009

TITLE: Purification and structural studies of β -glucan from naked oat bran

AUTHOR(S): Shen, Ruiling; Yao, Huiyuan

CORPORATE SOURCE: School of Food Science and Technology, Southern Yangtze University, Wuxi, Jiangsu Province, 214036, Peop. Rep. China

SOURCE: Zhengzhou Gongcheng Xueyuan Xuebao (2004), 25(4), 44-47

CODEN: ZZGHAR; ISSN: 1671-1629

PUBLISHER: Zhengzhou Gongcheng Xueyuan Xuebao Bianjibu

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB Beta-Glucan was extracted and purified from naked oat bran by adding (NH₄)₂SO₄ and using ion-exchange as well as gel-filtration. POG11 was mainly composed of glucose. The **purity** was analyzed by fluorescence detection and β - **glucan**'s content was 98.6%

quantified by enzyme. Its mol. wt. detected by HPLC was 2.62+106. The structure of the isolated **β- Glucan** showed that the glucose units were joined with 1, 3 and 1, 4-linkage by IR spectral and 13C-NMR detection.

L9 ANSWER 5 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1065098 CAPLUS
DOCUMENT NUMBER: 143:228341
TITLE: **β-Glucan** extraction from oat bran and determination of molecular weight distribution
AUTHOR(S): Guan, Xiao; Yao, Huiyuan; Zhou, Sumei
CORPORATE SOURCE: College of Food, Jiangnan University, Wuxi, 214036, Peop. Rep. China
SOURCE: Shipin Kexue (Beijing, China) (2003), 24(7), 40-43
CODEN: SPKHD5; ISSN: 1002-6630
PUBLISHER: Zhongguo Shipin Zazhishe
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB Extraction of **β- glucan** from oat bran and products obtained under different processing conditions was studied. The **purity** of the **β- glucan** was 80%. The mol. wt. distribution was analyzed by gel filtration chromatog. **β-Glucans** extracted in different extraction conditions had different mol. wt. distributions and protein was sometimes associated with the **β- glucan**. **β-Glucans** extracted at higher temps. (65° and 95°) had very high average mol. wts. (about 2.4 + 106) and their mol. wt. distributions were rather limited; **β- glucan** extracted at lower temperature (40°) had relatively low average mol. wts. (about 3.4 + 105) and the mol. wt. distribution was extensive. The **β- glucan** mols. could not be hydrolyzed in alkaline conditions.

L9 ANSWER 6 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:965082 CAPLUS
DOCUMENT NUMBER: 141:400970
TITLE: Pharmaceutical compositions comprising cereal beta (1-3) beta (1-4) glucan
INVENTOR(S): Redmond, Mark J.; Fielder, David A.
PATENT ASSIGNEE(S): Ceapro Inc., Can.
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004096242	A1	20041111	WO 2004-CA662	20040430
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2004234192	A1	20041111	AU 2004-234192	20040430
CA 2522739	AA	20041111	CA 2004-2522739	20040430
EP 1622627	A1	20060208	EP 2004-730431	20040430
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
 US 2006121131 A1 20060608 US 2006-554290 20060206
 PRIORITY APPLN. INFO.: US 2003-467146P P 20030502
 US 2003-477048P P 20030610
 WO 2004-CA662 W 20040430

AB The present invention relates to pharmaceutical compns. comprising a $\beta(1-3), \beta(1-4)$ - **glucan** and a pharmaceutically active agent or a botanical extract A method to extract and purify cereal β -**glucan** is also described. The high **purity** of the cereal β -**glucan** obtained according to the present invention allows for the preparation of clear, colorless viscous liquid prepns. These liquid prepns. are stable to gelling effects when kept at ambient temps. and low ash concns., and can be used to prepare the pharmaceutical compns. of the present invention. For example, a mouthwash or spray containing a nutraceutical extract was prepared An extract of Echinacea angustifolia (1000

mg) in 45% ethanol was added to a stirred solution of oat β - **glucan** to achieve a final concentration of 0.5% wt./wt. oat β -**glucan**. The mixture was evaporated under reduced vacuum to remove the alc., affording a clear light amber solution

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 7 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:634688 CAPLUS

DOCUMENT NUMBER: 141:349101

TITLE: Isolation, structural features and rheological properties of water-extractable β -glucans from different Greek barley cultivars

AUTHOR(S): Irakli, Maria; Biliaderis, Costas G.; Izydorczyk, Marta S.; Papadoyannis, Ioannis N.

CORPORATE SOURCE: Analytical Chemistry Laboratory, Department of Chemistry, Aristotle University, Thessaloniki, 541 24, Greece

SOURCE: Journal of the Science of Food and Agriculture (2004), 84(10), 1170-1178
 CODEN: JSFAAE; ISSN: 0022-5142

PUBLISHER: John Wiley & Sons Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB β -Glucans were isolated from six Greek barley cultivars (Persefoni, Kos, Thessaloniki, Athinaida, Dimitra and Triptolemos) by water extraction at 47°, enzymic removal of starch and protein and subsequent precipitation of the water-soluble β -glucans with 37% (w/v) ammonium sulfate saturation The **purity** of barley β -glucans was high (>93% dry basis) with some small contamination by protein (<3.84%). The mol. size of the β - **glucan** isolates was determined by high-performance size-exclusion chromatog. (HPSEC); the wt.-average mol. wts . and the intrinsic viscosities ranged between 0.45×10^6 and 1.32×10^6 and 2.77 and 4.11 dL g⁻¹, resp. Structural features of barley β -glucans were revealed by ¹³C NMR spectroscopy and high-performance anion-exchange chromatog. (HPAEC) of the oligomers released by the hydrolytic action of lichenase. Lichenase degradation showed that β -glucans from all barley cultivars consisted of blocks of cellotriosyl and cellotetraosyl units, accounting for 90.6-92.3% of the total oligomers released, with a molar proportion of these units between 2.31 and 2.77. Rheol. measurements of aqueous solns./dispersions of β -glucans showed the behavior of non-interacting polysaccharides and a transition from the typical viscoelastic response to gel-like properties after a time period that depended on the mol. size of the polysaccharide. The lowest mol. size β -glucans from the Triptolemos cultivar showed shorter gelation times than their higher mol. wt. counterparts. The effect of sugar incorporation (glucose, fructose, sucrose, xylose and ribose), at a concentration of 30% (w/v), to the β -glucans gels (6% w/v) on

compression parameters seemed to be related to the type of sugar used; the pentose sugars substantially reduced gel firming.

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 8 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:374602 CAPLUS

DOCUMENT NUMBER: 133:119330

TITLE: Effect of extrusion cooking on the primary structure and water solubility of β -glucans from regular and waxy barley

AUTHOR(S): Jiang, Gaosong; Vasanthan, Thava

CORPORATE SOURCE: Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Can.

SOURCE: Cereal Chemistry (2000), 77(3), 396-400

CODEN: CECHAF; ISSN: 0009-0352

PUBLISHER: American Association of Cereal Chemists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Water-soluble β -glucan from native and extrusion-cooked barley flours of two barley cultivars, Candle (a waxy starch barley) and Phoenix (a regular starch barley), was isolated and purified. The purity of β -glucan samples was 85-93% (wt./wt., dry wt. basis) for Candle and 77-86% (wt./wt., dry wt. basis) for Phoenix. The water solubility of β -glucan (at room temperature, 25°C) in the native and extruded flours (primary solubility) was different from that of the purified β -glucan samples (secondary solubility). The solubility of β -glucan in the native and extruded Candle flour was substantially higher than that of β -glucan in Phoenix. For both cultivars, β -glucan in the extruded flours had solubility (primary solubility) values higher than in their native counterparts. The solubility of β -glucan in the purified β -glucan samples differed depending on the barley cultivar and the extrusion conditions employed. The glycosidic linkage profiles of purified soluble β -glucan from native and extruded barley flours were determined in order to understand the changes in the primary structure of β -glucan and the effect of extrusion on the β -glucan structure-solubility relationship.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 9 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:35060 CAPLUS

DOCUMENT NUMBER: 128:114241

TITLE: Extraction and functional properties of barley β -glucan as affected temperature and pH

AUTHOR(S): Temelli, Feral

CORPORATE SOURCE: Dept. of Agricultural, Food & Nutritional Science, Univ. of Alberta, AB, T6G 2P5, Can.

SOURCE: Journal of Food Science (1997), 62(6), 1194-1197, 1201

CODEN: JFDSA; ISSN: 0022-1147

PUBLISHER: Institute of Food Technologists

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Barley is high in β -glucan, a soluble fiber component. Effects of extraction temperature (40-55 C) and pH (7.0-10.0) on recovery, purity and functional properties of β -glucan were investigated on whole Condor barley flour. At pH 7.0, 8.0 and 55°C, 86.5% of the β -glucan in the feed flour was recovered in the gum product with 89.1% (dry wt.) purity. β -Glucan content increased ($p < 0.05$) with temperature but not with pH. Apparent viscosity of 1% (wt./volume) dispersions of β -glucan gum from pH 7.0 increased ($p < 0.05$) with extraction

temperature at constant shear rate and viscosity decreased slightly with increasing shear rate. Whippability and foam stability of gums from pH 8.0 and 45°C were maximum. Emulsions prepared with β -glucan gum from pH 7.0 and 55°C were 63% stable after centrifugation. Barley β -glucan shows great potential as a thickener or stabilizer.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 10 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:653045 CAPLUS

DOCUMENT NUMBER: 127:328521

TITLE: Purification of plasma membranes from dry maize embryos

AUTHOR(S): Sanchez-Nieto, Sobeida; Garcia-Rubio, Oscar; Pacheco-Moises, Fermin; Carballo, Aquiles; Rodriguez-Sotres, Rogelio; Gavilanes-Ruiz, Marina
CORPORATE SOURCE: Departamento de Bioquimica DEPG, Facultad de Quimica. Conj. E, UNAM, Mexico, 04510, Mex.

SOURCE: Physiologia Plantarum (1997), 101(1), 157-164
CODEN: PHPLAI; ISSN: 0031-9317

PUBLISHER: Munksgaard

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Isolation of subcellular fractions from dry structures such as seeds or their tissues is difficult. In the present work, plasma membranes were isolated from dry maize (*Zea mays* L.) embryos with an enrichment of 11-fold as estimated by glucan synthase II (GSII, EC 2.4.1.34) activity and a purity of 78 to 90% as judged by the sensitivity of ATP hydrolysis to vanadate, a specific inhibitor of the plasma membrane H⁺-ATPase (EC 3.6.1.35). The procedure involved a double homogenization of the dry embryos and the addition of a 1500-g supernatant to an aqueous polyethyleneglycol-dextran two-phase partitioning system; the optimal ratio of polyethyleneglycol-dextran for purification of plasma membranes from dry seeds was 6.8/6.8% (wt./wt.). In the isolated membranes, a trace of a tonoplast enzyme marker (tonoplast H⁺-ATPase, EC 3.6.1.3) could be detected, but there were negligible amts. of mitochondrial and rough endoplasmic reticulum markers, H⁺-ATPase (EC 3.6.1.34) and diacylglycerol acyltransferase (EC 2.3.1.20), resp. The technique could also be used in hydrated embryos. The entire procedure can be carried out in 5 to 6 h. The resulting preparation is stable for at least 2 mo at -70°C. The membranes of dry and hydrated embryos exhibited a high level of vanadate-sensitive ATPase activity that was increased by lysophosphatidylcholine.

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 11 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:411281 CAPLUS

DOCUMENT NUMBER: 125:81895

TITLE: Chemical modification and fractionation of pea stem polysaccharides

AUTHOR(S): Simkovic, Ivan; Alfoeldi, Juraj; Auxtova, Olga; Liskova, Desana; Lerouge, Patrice

CORPORATE SOURCE: Inst. Chem., Slovak Academy Sci., Bratislava, 84238, Slovakia

SOURCE: Carbohydrate Polymers (1996), 29(1), 51-56
CODEN: CAPOD8; ISSN: 0144-8617

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Pea stem tissue was fractionated by chemical and enzymic methods and the water soluble fractions analyzed by NMR spectroscopy and high-pH anion-exchange chromatog. with pulsed amperometric detection (HPAEC-PAD).

The obtained results indicate that **arabinogalactosyloglucan** in similar **purity** could be isolated by one-step extraction with 2% NaOH or 5% ZnCl₂, as well as by two-step treatment with pronase and α -amylase. By quaternization under alkaline conditions with 3-chloro-2-hydroxypropyltrimethylammonium chloride (CHMAC), a mixture of arabinogalactan and galacturonan modified with trimethylammoniumhydroxypropyl (TMAHP) group (10.8% yield) could be isolated. By extraction with 2% NaOH, a fraction in 19.0% yield could be obtained, contrary to 2.4% yield of polysaccharide when treated with 5% ZnCl₂. Treatment with pronase and amylase have given 1.5 or 4.5% yields of soluble fractions, while the subsequent residue extracted with ammonium oxalate gave galacturonic acid oligomers (2.1% yield). Direct extraction with (NH₄)₂(COO)₂ and without enzymic pretreatment solubilized only a small part of the material (0.9% yield) consisting of three polysaccharide fractions having the highest mol. wt. from all obtained fractions.

L9 ANSWER 12 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:323894 CAPLUS
 DOCUMENT NUMBER: 125:9204
 TITLE: Production of β -glucan and from cereal grains
 INVENTOR(S): Wang, Linji; Lynch, Ike E.; Goering, Kenneth
 PATENT ASSIGNEE(S): Centennial Foods, Inc., USA
 SOURCE: U.S., 4 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5512287	A	19960430	US 1994-241857	19940512
PRIORITY APPLN. INFO.:			US 1994-241857	19940512

AB Cereal grains (e.g., barley and oat) are ground and slurried in water below the starch gelatinization temperature. Bran, starch granules, and protein are removed. β -Glucan is precipitated and dehydrated with alc. (e.g., isopropanol), screened, and ground to become a white-colored product with a neutral flavor. The method recovers 33-75% of the total natural occurring β -glucan in cereal grains. The β -glucan product is water-soluble with **purity** ranging from 60-90% and exhibiting mol. wt. of β -glucan ranging from 4 + 105 to 2 + 106 Da.

L9 ANSWER 13 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:261079 CAPLUS
 DOCUMENT NUMBER: 124:343744
 TITLE: Water-soluble oleanolic acid. Production, inhibition of insoluble glucan synthesis and antibacterial action
 AUTHOR(S): Sasazuka, Tadashi; Kameda, Yoshiro; Endo, Makoto; Suzuki, Hiroshi; Hiwatachi, Kazutoshi
 CORPORATE SOURCE: Tech. Res. Lab., Hokkaido Sugar Co., Ltd., Kitami, 099-15, Japan
 SOURCE: Seito Gijutsu Kenkyu Kaishi (1995), 43, 63-7
 CODEN: SGIIA6; ISSN: 0370-9841
 PUBLISHER: Seito Gijutsu Kenkyukai
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

AB Oleanolic acid (OA) is present in sugar beet as an aglycon of saponin. Crude beet saponin extracted from beet pulp was subjected to ultrafiltration to remove high mol.wt. substance such as pectin and arabinan, and hydrolyzed with acid to obtain crude OA. Its **purity** was only 50.apprx.60%, and thus addnl. purification was carried out. Purified OA, which is water insol., was incorporated into cyclodextrin (CD) to

eliminate this property. The bacteriostatic effect of OA incorporated into CD was similar to that of OA. When G2- γ -CD, G1- β -CD, γ -CD and β -CD were used, the ratio of OA incorporated into each CD to CD incorporated with OA and unreacted CD was found exceed 10%. The solubility of β -CD was 1.85 g/100 g water at 25°C, while that of OA- β -CD, 3.85 g/100 g water and increased with temperature OA incorporated into β -CD and G 1 β -CD inhibited the formation of insol. glucan by Streptococcus mutans and its growth at a low concentration of 5.aprx.10 μ g/mL.

L9 ANSWER 14 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:560841 CAPLUS
DOCUMENT NUMBER: 123:4195
TITLE: Glycosidases in tissues of some Brassicaceae.
Radish-Root β -amylase: extraction, purification
and characterization
AUTHOR(S): Rashad, M. M.; Jwanny, E. W.; El-Sayed, S. T.;
Mahmoud, A. E.; Abdallah, N. M.
CORPORATE SOURCE: Biochemistry Department, National Research Centre,
Cairo, Egypt
SOURCE: Bioresource Technology (1995), 51(2 & 3), 183-6
CODEN: BIRTEB; ISSN: 0960-8524
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The enzyme β -amylase (1,4- α -D- glucan maltohydrolase, E.C. 3.2.1.2) was isolated and purified to homogeneity from the extract of healthy radish roots (Raphanus sativus). The purification involved ammonium sulfate precipitation (100% saturation); DEAE-cellulose; hydroxylapatite and Sephadex G-200 chromatog. The purity and homogeneity of the enzyme preparation were judged by gel filtration on Sephadex G-200 and disk electrophoresis. The amount of the original enzyme activity remaining was 23% after 195.2 times purification, with specific activity 820 U/mg protein. The enzyme was active against starch, glycogen and α -dextrin but it failed to hydrolyze sucrose, maltose and lactose. Its mol. wt. was 58,880 Da, as estimated by gel filtration on Sephadex G-200. The Km value was 2.85% for soluble starch at optimum pH 5.0 and 45°. The enzyme was relatively heat-stable for 15 min at 30 and 40°, showing only about 8% loss of activity. The enzyme was completely inactivated by Cu²⁺, Fe²⁺, Ag⁺, Hg²⁺, but only moderately inhibited by p-chloromercuribenzoate. Strongly activated enzyme was obtained with EDTA, Zn²⁺, K⁺, Ca²⁺ and Co²⁺.

L9 ANSWER 15 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:173521 CAPLUS
DOCUMENT NUMBER: 122:4138
TITLE: Glycosidases of turnip leaf tissues. II. Isolation, purification, and some physiochemical characterization
AUTHOR(S): Jwanny, Etidal W.; El-Sayed, Sanna T.
CORPORATE SOURCE: Biochem. Dep., Natl. Res. Cent., Cairo, Egypt
SOURCE: Applied Biochemistry and Biotechnology (1994), 49(1), 23-34
CODEN: ABIBDL; ISSN: 0273-2289
PUBLISHER: Humana
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A number of glycosidase enzymes have been isolated and identified in healthy fresh leaves of turnip. Myrosinase (β -thioglucosidase, EC. 3.2.3.1), disaccharase (β -fructofuranosidase, EC. 3.2.1.26), and β -amylase (α -1,4- glucan maltohydrolase, EC 3.2.1.2) have been isolated and purified in powder form. The purification methods were salting out with ammonium sulfate, DEAE-cellulose column chromatog., hydroxylapatite batch chromatog., and gel filtration through Sephadex G-200. Four isoenzymes of myrosinase enzyme could be isolated. The most

active one was purified (131.3 times) and found to have an SA of 19.7 U/mg. An enzyme causing hydrolysis of amylose and glycogen has been isolated and partially purified. It had an SA of 22.6 U/mg and 49.1-fold purification. Seven isoenzymes of disaccharides were isolated, but only one was purified with SA of 1448.5 U/mg and 1316.8 fold purification. The yield of the purified myrosinase and disaccharase enzymes was 3.68 and 0.5 mg, resp., from 100 gm dry wt of turnip leaves. Confirmation of purity with disk electrophoresis was performed. A single sharp band was obtained for each pure enzyme by disk electrophoresis. The chromatog. anal. of the hydrolytic end product of the β -amylase indicated the presence of maltose. This results confirm the β -form of amylase enzyme.

L9 ANSWER 16 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:132401 CAPLUS

DOCUMENT NUMBER: 120:132401

TITLE: Partitioning and purification of α -amylase in aqueous two-phase systems

AUTHOR(S): Schmidt, A. S.; Ventom, A. M.; Asenjo, J. A.

CORPORATE SOURCE: Biochem. Eng. Lab., Univ. Reading, Reading, RG6, UK

SOURCE: Enzyme and Microbial Technology (1994), 16(2), 131-42
CODEN: EMTED2; ISSN: 0141-0229

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The partition behavior of pure α -amylase (1,4- α -D-glucan glucanohydrolase, E. C. 3.2.1.1) in aqueous two-phase systems was examined in order to investigate the effects of changes in type of phase components on the partition coefficient K. Polyethylene glycol (PEG)/dextran, PEG/phosphate, and PEG/sulfate systems were evaluated. Factors such as PEG mol. wt. (MW), pH, and concentration of NaCl were all found to influence K. At low values (<2 k Uml⁻¹ phase system), enzyme concentration had no effect on K. At higher concns. (up to 20.40 kU mL⁻¹ phase system), corresponding to ca. 12.3 gl⁻¹, the phases became saturated and a two-fold increase in K was observed, but also lower recovery. Subsequently, the separation and purification of α -amylase from typical contaminants from supernatant and whole broth of Bacillus subtilis fermentation was examined. The best partition conditions were found in PEG 4000/phosphate systems with 8.8% wt./wt. NaCl where the K can be increased 78 times from K = 1.3 to K = 100. These conditions were then used to study the effect of phase volume ratio (R) on the partition coefficient, the purification factor (PF), and recovery of α -amylase from industrial ferms. R was found to influence the purification factor and the recovery, but not the partition coefficient. However, both α -amylase and contaminants partitioned to the top phase, leading to relatively poor separation (PF = 3.2 for R = 1). In a PEG/sulfate system, the addition of NaCl had an extreme effect on the partition behavior of α -amylase, giving an extreme K for α -amylase (K = 6,800) at a high concentration of NaCl (8.8% wt./wt.) and an extremely low K (K < 0.005) at a lower concentration of NaCl. By exploiting this extreme partition behavior and manipulating R in a two-stage strategy, a 53-fold purification (with 86% wt./wt. purity) could be calculated of a maximum possible of 63 at 100% wt./wt. pure α -amylase.

L9 ANSWER 17 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:125027 CAPLUS

DOCUMENT NUMBER: 116:125027

TITLE: Purification of plasma membrane and protein composition changes during ripening and senescence of cherry tomato

AUTHOR(S): Soudain, P.; Guclu, J.; Bureau, D.; Pilard, P.; Joulie, C.; Daussant, J.

CORPORATE SOURCE: Lab. Physiol. Organes Veg. Apres Recolte, CNRS,
Meudon, F-92190, Fr.
SOURCE: Journal of Plant Physiology (1992), 139(3), 257-64
CODEN: JPPHEY; ISSN: 0176-1617
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Highly plasmalemma-enriched fractions were prepared from the pericarp of cherry tomato (*Lycopersicon esculentum* var. *cerasiforme*) by aqueous polymer two-phase partitioning. The purified vesicles were suitable for electrophoretic characterization of the membrane proteins at five different stages of fruit ripening and senescence. The validity of the polyethylene glycol-dextran partition system has been proved by the distribution between the two phases of marker enzyme activities assayed under optimized conditions for this new fruit material. Although the properties of the vanadate-inhibited K⁺, Mg²⁺-ATPase as a plasmalemma marker were not as specific as for other plant species, a several-fold enrichment of its activity was found in the upper phase. This result was essentially confirmed by a similar high enrichment ratio of **glucan** synthase II activity, representing a more reliable test. Complementary, non-significant contamination of the upper phase was demonstrated using the different endomembrane markers. Assessment of fraction **purity** also involved electron microscopy, from which an absolute criterion for the plasmalemma origin of the vesicles is obtained. More than 30 polypeptides were clearly resolved by SDS-PAGE in the plasmalemma fraction at the mature-green stage of the fruit, with the most prominent bands in the 49-57 or 65-72 kDa regions and some further prominent bands corresponding to 18.5, 27, 29, and 100 kDa. The changes in protein profile did not indicate the occurrence of any disorganization process during fruit life, even in the last senescence phase, and only a few major constituents decreased (18.5, 27 kDa). However, some marked changes in the expression of membrane-associated proteins occurred during the early ripening period, such as the sudden appearance of a 24 kDa major constituent and an increase in the amount of the 41 kDa band. The importance of these putative participants in the ripening and senescence processes is discussed.

L9 ANSWER 18 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:447677 CAPLUS
DOCUMENT NUMBER: 115:47677
TITLE: The effect of β -glucan molecular weight on the sensitivity of dye binding assay procedures for β -glucan estimation
AUTHOR(S): Anderson, I. W.
CORPORATE SOURCE: Res. Lab., Bass Brewers Ltd., Burton-on-Trent/Staffordshire, DE14 1JZ, UK
SOURCE: Journal of the Institute of Brewing (1990), 96(5), 323-6
CODEN: JINBAL; ISSN: 0368-2587
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An assay procedure has been developed for quantifying β -**glucan**, based upon its reaction with the dye Congo Red. The sensitivity of this method to changes in β - **glucan** mol. wt. has been ded. using β -glucans prepared from standard material by acid hydrolysis and comparison has been made with a Calcofluor-based method for quantifying β -glucans. The Congo Red assay was found to be optimally sensitive to β -glucans with mol. wts. of .apprx.2.5 + 105 Daltons, whereas the Calcofluor assay was most sensitive to β -glucans with mol. wts. >5 + 104 Daltons. The **purity** of the β - **glucan** used during this investigation was determined using an enzyme-based procedure in which the polysaccharide was degraded to glucose by the addition of β -glucanase. The β -glucanase employed was partially purified from *Trichoderma viride* cellulase using a novel batch ion-exchange method which is also described.

L9 ANSWER 19 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1989:188705 CAPLUS

DOCUMENT NUMBER: 110:188705

TITLE: Quantification of high molecular weight (1 → 3)(1 → 4)-β-D-glucan using Calcofluor complex formation and flow injection analysis. I. Analytical principle and its standardization

AUTHOR(S): Joergensen, Kim G.

CORPORATE SOURCE: Dep. Biotechnol., Carlsberg Res. Lab., Copenhagen, DK-2500, Den.

SOURCE: Carlsberg Research Communications (1988), 53(5), 277-85

CODEN: CRCODS; ISSN: 0105-1938

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An automatic flow injection anal. (FIA) system based on the specific complex formation between Calcofluor and soluble high-mol.-wt. β- glucan was devised. The fluorescence intensity of the complex, in a solution is proportional to the concentration of β- glucan mols. with a mol. wt. (MW) >104. For calibration, stds. with known purity of β- glucan are required. Four preps. differing in MW distribution and purity gave similar calibration values. Comparison of the Calcofluor-FIA method with the enzymic method of B. V. McCleary and M. Glennie-Holmes (1985) showed a high correlation between the values obtained by 2 methods. The water soluble β- glucan fraction of grains from 23 barley varieties was determined by both methods and yielded a linear correlation coefficient of $r = 0.976$ between the 2 procedures.

L9 ANSWER 20 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1985:75727 CAPLUS

DOCUMENT NUMBER: 102:75727

TITLE: Preparation and polypeptide composition of chlorophyll-free plasma membranes from leaves of light-grown spinach and barley

AUTHOR(S): Kjellbom, Per; Larsson, Christer

CORPORATE SOURCE: Dep. Biochem., Univ. Lund, Lund, S-221 00, Swed.

SOURCE: Physiologia Plantarum (1984), 62(4), 501-9

CODEN: PHPLAI; ISSN: 0031-9317

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Chlorophyll-free preps. of plasma membranes from leaves of barley (*Hordeum vulgare* cv Kristina) and spinach (*Spinacia oleracea* cv Viking II) were obtained by partition in an aqueous dextran-polyethylene glycol 2-phase system. Glucan synthetase II (EC 2.4.1.34), a marker for the plasma membrane, was highly enriched in both preps. Silicotungstic acid, a specific stain for the plasma membrane, indicated a purity close to 100% for the barley preparation. Both plasma membrane preps. contained a light-reducible cytochrome b, as shown by low-temperature spectroscopy. The plasma membranes had a low protein content compared to the bulk of intracellular membranes. The polypeptide composition of the barley and spinach plasma membranes showed striking similarities, with the most prominent polypeptides in the 49-58-kdalton region, and some further prominent bands in the 30-kdalton region. Some high-mol.-wt. polypeptides in the 73-110-kdalton region were also typical for the plasma membranes compared to the microsomal fractions.

L9 ANSWER 21 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1974:142228 CAPLUS

DOCUMENT NUMBER: 80:142228

TITLE: Purification and properties of a specific inducible β-glucanase, succinoglucan depolymerase from

AUTHOR(S): Flavobacterium
CORPORATE SOURCE: Amemura, Akinori; Moori, Konomi; Harada, Tokuya
SOURCE: Inst. Sci. Ind. Res., Osaka Univ., Suita, Japan
Biochimica et Biophysica Acta, Enzymology (1974),
334(2), 398-409
CODEN: BBEZAD; ISSN: 0924-1086

DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Succinoglucan** depolymerase from the culture fluid of *Flavobacterium* sp. strain M64 was purified by fractionation with (NH₄)₂SO₄, followed by chromatog. on DEAE-cellulose and Sephadex G-200. A 90-fold purification was achieved and the final preparation showed .apprx.90% **purity** on polyacrylamide gel disc electrophoresis. The enzyme has a mol. wt. of 180,000. The optimal pH for enzyme activity is 5.8 and the enzyme is stable from pH 4.5 to 10.0. It is stable up to 35°, but rapidly loses activity at temps. >35°. The K_m values for **succinoglucan** and desuccinylated **succinoglucan** are 1.7 mg/ml and 1.2 mg/ml, resp. **Succinoglucan** is depolymerized to yield a polymer with a d.p. of 12 and the product was suggested to be a structural unit of **succinoglucan**. β-Glucans and β-oligosaccharides, including schizophyllan, kefiran, laminaran, lutean, luteose, carboxymethylcellulose, curdlan, β-1,6- and β-1,3-oligosaccharides, cellobiose, 6-O-laminaritrilosylglucose, and lactose are not hydrolyzed while yeast **glucan** and pachyman are hydrolyzed only slightly. **Succinoglucan** depolymerase is only formed when **succinoglucan** or desuccinylate **succinoglucan** is present as the sole carbon source or with another C compound such as xylose. Compds. such as glucose and succinic acid repress depolymerase formation induced by **succinoglucan**. On partial acid hydrolysis or enzymolysis of **succinoglucan**, most of the inductive effect is lost.

L9 ANSWER 22 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1962:3893 CAPLUS
DOCUMENT NUMBER: 56:3893
ORIGINAL REFERENCE NO.: 56:761g-i
TITLE: The activity of yeast glucan preparations with regard to the properdin systems in blood
AUTHOR(S): Preobrazhenskaya, M. E.; Kuznetsova, V. M.; Rozenfel'd, E. L.
SOURCE: Voprosy Meditsinskoi Khimii (1961), 7, 158-63
CODEN: VMDKAM; ISSN: 0042-8809
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB Glucans were prepared from com. yeast and from pure cultures. Yeast (500 g.) was triturated in physiol. saline (I) and then diluted with I in proportion of 50 g. to 1 l. of I. The suspension was boiled for 3 hrs., centrifuged, and solids suspended in I and boiled for 3 hrs. more. After the second boiling addition of iodine did not produce any color. Solids were centrifuged again, washed with I, and treated with 300 ml. of KOH (30%). Further purification was made by published methods (CA 53, 19900f) for the fractionation of zymosan. The insol. fraction represents **glucan** (1% of the wt. of the fresh yeast); **purity** of the preparation was tested by chromatography using CH₃COCH₃, CH₃(CH₂)₂CH₂OH, and H₂O (7-2-1) and aniline hydrophthalate as developer. Glucans are able to bind properdin and inactivate the third component of complement. Cellulose powder tested for the same action was completely inactive.

L11 ANSWER 1 OF 3 MEDLINE on STN
 ACCESSION NUMBER: 2004002204 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 14698891
 TITLE: Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos*.
 AUTHOR: Wang Yifeng; Zhang Mei; Ruan Dong; Shashkov Alexander S; Kilcoyne Michelle; Savage Angela V; Zhang Lina
 CORPORATE SOURCE: Department of Chemistry, Wuhan University, 430072, Wuhan, China.
 SOURCE: Carbohydrate research, (2004 Jan 22) Vol. 339, No. 2, pp. 327-34.
 Journal code: 0043535. ISSN: 0008-6215.
 PUB. COUNTRY: Netherlands
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 200409
 ENTRY DATE: Entered STN: 6 Jan 2004
 Last Updated on STN: 17 Sep 2004
 Entered Medline: 16 Sep 2004

AB Six polysaccharides were extracted sequentially from the fresh sclerotium of *Poria cocos* cultivated in China using 0.9% NaCl (PCS1), hot water (PCS2), 0.5M NaOH (PCS3-I and PCS3-II), and 88% formic acid (PCS4-I and PCS4-II). Their chemical and physical characteristics were determined using infrared spectroscopy (IR), gas chromatography (GC), GC-MS methylation analysis, ¹³C NMR spectroscopy, elementary analysis (EA), protein analysis, size exclusion chromatography combined with laser light scattering (SEC-LLS), light scattering (LS), and viscometry. The results indicated that the polysaccharides PCS1, PCS2, and PCS3-I were heteropolysaccharides containing D-glucose, D-galactose, D-mannose, D-fucose, and D-xylose; the predominant monosaccharide was D-glucose except for PCS1 where it was D-galactose. PCS3-II, the main component of the sclerotium of *P. cocos*, was a linear (1-->3)-beta-D-glucan of high purity. PCS4-I consisted of (1-->3)-beta-D-glucan with some beta-(1-->6) linked branches. PCS4-II was mainly composed of (1-->3)-beta-D-glucan containing some glucose branches. The M(w) values of the six polysaccharides PCS1, PCS2, PCS3-I, PCS4-I in 0.2M NaCl aqueous solution, PCS3-II, and PCS4-II in dimethyl sulfoxide (Me(2)SO) were determined to be 11.6 x 10(4), 20.8 x 10(4), 17.1 x 10(4), 9.1 x 10(4), 12.3 x 10(4), and 21.1 x 10(4), respectively. The six polysaccharides in aqueous solution or Me(2)SO exist as flexible chains.

L11 ANSWER 2 OF 3 MEDLINE on STN
 ACCESSION NUMBER: 2002446317 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 12205959
 TITLE: Chemical studies on the polysaccharide in fructus Corni.
 AUTHOR: Yang Y; Liu C; Liu J; Wang Y; Zhang Z
 CORPORATE SOURCE: Henan College of Traditional Chinese Medicine, Zhengzhou 450003.
 SOURCE: Zhongguo Zhong yao za zhi = Zhongguo zhongyao zazhi = China journal of Chinese materia medica, (1999 Oct) Vol. 24, No. 10, pp. 614-6, 639.
 Journal code: 8913656. ISSN: 1001-5302.
 PUB. COUNTRY: China
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: Chinese
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 200212
 ENTRY DATE: Entered STN: 4 Sep 2002
 Last Updated on STN: 17 Dec 2002
 Entered Medline: 12 Dec 2002

AB OBJECTIVE: To study the tonic constituents in Fructus Corni, the pulp of Cornus of ficinalis. METHOD: Hot-water extraction, ethanol precipitation and column chromatography on DEAE-cellulose and Sephadex G-200 were used to isolate and purify the polysaccharides in Fructus Corni. HPGPC was used to determine the **purity** and measure the mean molecular **weight** of the polysaccharides. TLC, PC, GC, GC-MS, ¹³CNMR, partial acid hydrolysis and permethylation to elucidate the structures. RESULT: A water-soluble polysaccharide with mean molecular **weight** of 2.47×10^4 , named Co-4, was obtained. It's main chain was (1-->4) linked beta-D-**glucan**, with branching points at position 6. CONCLUSION: A thorough study on the polysaccharides of Fructus Corni has been made for the first time and the structure of Co-4 has been elucidated.

L11 ANSWER 3 OF 3 MEDLINE on STN
ACCESSION NUMBER: 87016922 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2945202
TITLE: An essential function for acyl carrier protein in the biosynthesis of membrane-derived oligosaccharides of Escherichia coli.
AUTHOR: Therisod H; Weissborn A C; Kennedy E P
CONTRACT NUMBER: GM 19822 (NIGMS)
GM22057 (NIGMS)
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (1986 Oct) Vol. 83, No. 19, pp. 7236-40.
Journal code: 7505876. ISSN: 0027-8424.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198610
ENTRY DATE: Entered STN: 2 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 30 Oct 1986

AB Membrane-derived oligosaccharides are branched, substituted beta-glucans localized in the periplasmic space of Escherichia coli and other Gram-negative bacteria. The biosynthesis of membrane-derived oligosaccharides and of analogous periplasmic oligosaccharides found in plant bacteria is of particular interest because it is subject to strict osmotic regulation [Miller, K.J., Kennedy, E.P., and Reinhold, V.N. (1986) Science 231, 48-51]. An enzyme system catalyzing the synthesis of the (beta 1-2)-linked **glucan** backbone of E. coli membrane-derived oligosaccharides from UDP-glucose requires both a membrane component and a cytosolic protein termed transglucosylation factor. The factor has now been purified to apparent homogeneity and has been found to be identical to acyl carrier protein (ACP), the phosphopantetheine-containing protein of low molecular **weight** that has long been known to be essential for fatty acid synthesis in E. coli and other organisms. Both are small, heat-stable, highly anionic proteins with identical chromatographic and electrophoretic behavior. ACP of the highest **purity** has an activity in the transglucosylation system indistinguishable from that of the protein independently purified as transglucosylation factor. Antibody raised against pure ACP completely inhibits transglucosylation activity; this inhibition is overcome by titration of the antibody with either ACP or transglucosylation factor. These findings provide evidence for an essential function of ACP unrelated to the biosynthesis of lipid.

L12 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1053748 CAPLUS
DOCUMENT NUMBER: 143:332609
TITLE: External healing dusting powder
INVENTOR(S): Kocnar, Jan; Grulich, Vaclav; Novak, Miroslav;
Pekarek, Miroslav
PATENT ASSIGNEE(S): Jan Kocnar-Perfektra S.R.O., Czech Rep.
SOURCE: Czech Rep., 4 pp.
CODEN: CZXXED
DOCUMENT TYPE: Patent
LANGUAGE: Czech
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CZ 295322	B6	20050713	CZ 2001-1800	20010522
PRIORITY APPLN. INFO.:			CZ 2001-1800	20010522
AB	A healing dusting powder for external (topical) treatment of inflamed, necrotic, or infected skin wounds and damaged s.c. tissues (especially varicose ulcers) is described. The powder contains 5-99.005 weight% dried sugarcane molasses, 0.005-90 wt.% dry β -glucan, and 0.99-94.995 weight% carrier (ZnO). Addnl. components added at 0.1-20 weight% can have disinfectant, anti-inflammatory, local anesthetic, and keratoplastic activities depending on intended powder use.			

L12 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:534225 CAPLUS
DOCUMENT NUMBER: 115:134225
TITLE: A glucan-chitin mixture from Candida albicans BMM-12
INVENTOR(S): Cassone, Antonio; Bistoni, Francesco; Marconi, Pier
Francesco
PATENT ASSIGNEE(S): Consiglio Nazionale delle Ricerche, Italy; Istituto
Superiore di Sanita
SOURCE: Eur. Pat. Appl., 3 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 416343	A2	19910313	EP 1990-115690	19900816
EP 416343	A3	19910925		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 2023496	AA	19910305	CA 1990-2023496	19900817
HU 59726	A2	19920629	HU 1990-5752	19900903
JP 03119995	A2	19910522	JP 1990-232614	19900904
PRIORITY APPLN. INFO.:			IT 1989-21606	A 19890904
AB	A glucan-chitin mixture containing ≥ 90 wt.% of glucan with the phys. appearance of microscopic glucan bodies is manufactured by culturing C. albicans BMM-12. C. albicans BMM-12 was shake-cultured in a Winge soil (glucose, yeast extract and water) at 28°. After centrifugation, the cell mass was collected and processed to the glucan-containing product (yield, 13%) by autoclaving, alkali (NaOH 1 weight .permill.) and acetic acid (0.5 solution) treatment, and centrifugation.			

L12 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:205537 CAPLUS
DOCUMENT NUMBER: 114:205537
TITLE: Production of beta-1,3-glucan with Euglena

INVENTOR(S): Tuse, Daniel; Marquez, Leticia; Hokama, Leslie A.
 PATENT ASSIGNEE(S): SRI International, USA
 SOURCE: PCT Int. Appl., 25 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9012106	A1	19901018	WO 1990-US1644	19900328
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE				
US 5084386	A	19920128	US 1989-332502	19890331
CA 2028838	AA	19901001	CA 1990-2028838	19900328
EP 417254	A1	19910320	EP 1990-905922	19900328
EP 417254	B1	19950524		
R: BE, DE, DK, ES, FR, GB, IT, NL				
JP 03505101	T2	19911107	JP 1990-505868	19900328
US 5385832	A	19950131	US 1993-34609	19930322
PRIORITY APPLN. INFO.:			US 1989-332502	A 19890331
			WO 1990-US1644	W 19900328
			US 1991-802323	B1 19911204

AB β -1,3- Glucan (I) is manufactured by culturing *E. gracilis* in the dark. The production may reach 70-90 wt % of cell mass (based on dry weight). Also given is an easy method to isolate pyrogen-free I from *E. gracilis*. *E. gracilis* ATCC Number E12716 was shake-cultured in a medium containing glucose, salts, and vitamins for 72-96 h. After centrifugation, the cells were collected, disrupted, and processed to obtain I as white crystalline solid. When introduced into rabbit, I did not induce antibody production. The immunostimulant/immunopotentiator activities of the purified I were demonstrated.

L12 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1983:522796 CAPLUS
 DOCUMENT NUMBER: 99:122796
 TITLE: Water-soluble (1 \rightarrow 3), (1 \rightarrow 4)- β -D-glucans from barley (*Hordeum vulgare*) endosperm. II. Fine structure
 AUTHOR(S): Woodward, J. R.; Fincher, G. B.; Stone, B. A.
 CORPORATE SOURCE: Dep. Biochem., La Trobe Univ., Bundoora, 3083, Australia
 SOURCE: Carbohydrate Polymers (1983), 3(3), 207-25
 CODEN: CAPOD8; ISSN: 0144-8617
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Water-soluble (1 \rightarrow 3), (1 \rightarrow 4)- β -D-glucans isolated from barleys grown in Australia and the UK were depolymerized using a purified (1 \rightarrow 3), (1 \rightarrow 4)- β -D-glucan 4-glucanohydrolase (EC 3.2.1.73). Oligomeric products were quantitatively separated by high resolution gel filtration chromatography and their structures defined by methylation analysis. Approx. 90 wt. % of each polysaccharide consists of cellotriosyl and cellotetraosyl residues separated by single (1 \rightarrow 3)-linkages but blocks of 5-11 (1 \rightarrow 4)-linked glucosyl residues are also present in significant proportions. Periodate oxidation followed by Smith degradation suggested that contiguous (1 \rightarrow 3)-linked β -glucosyl residues are either absent, or present in very low frequency. The potential for misinterpretation of data due to incomplete Smith degradation was noted. The irregularly-spaced (1 \rightarrow 3)-linkages interrupt the relatively rigid, ribbon-like (1 \rightarrow 4)- β -glucan conformation and confer a flexibility and irregular shape on the barley (1 \rightarrow 3), (1 \rightarrow 4)- β -D-glucan, consistent with its solubility in water. Mol. models incorporating the major

structural features confirm that the polysaccharide is likely to assume a worm-like conformation in solution. Non-covalent interactions between long blocks of (1→4)-linkages in (1→3), (1→4)-β-D-glucans, or between these blocks and other polysaccharides, offer a possible explanation for the organization of polysaccharides in the framework of the cell wall.

L13 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:508805 CAPLUS
DOCUMENT NUMBER: 137:295172
TITLE: Transition from triple helix to coil of Lentinan in solution measured by SEC, viscometry, and ¹³C NMR
AUTHOR(S): Zhang, Lina; Li, Xuelian; Zhou, Qi; Zhang, Xufeng; Chen, Ruiqiang
CORPORATE SOURCE: Department of Chemistry, Wuhan University, Wuhan, 430072, Peop. Rep. China
SOURCE: Polymer Journal (Tokyo, Japan) (2002), 34(6), 443-449
CODEN: POLJB8; ISSN: 0032-3896
PUBLISHER: Society of Polymer Science, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Lentinan, β -(1 \rightarrow 3)-D- **glucan** with (1 \rightarrow 6) branching, was isolated from Lentinus edodes. Weight-average mol. weight M_w , radius of gyration $< s^2 >_{z1/2}$ and intrinsic viscosity $[\eta]$ of Lentinan in 0.2 M NaCl aqueous solution, dimethylsulfoxide (DMSO) and water/DMSO mixts. were measured by light scattering (LS), size exclusion chromatog. (SEC) combined with LS, and viscometry. The results indicated that the **glucan** exists mainly as triple-helical chains in 0.2 M NaCl aqueous solution and water/DMSO mixts. with over 20 wt% water content, and as single-flexible chain in DMSO. The data from SEC-LS, viscosity and ¹³C NMR measurements proved strongly that the helix-coil conformation transition occurred in a narrow range from 80 to 85 wt % DMSO aqueous solution, accompanying with obvious changes of M_w , $< s^2 >_{z1/2}$, $[\eta]$ as well as signals of C6 and C6s. The transition of Lentinan in water/DMSO mixture was irreversible. The difference in ¹³C NMR spectra for the triple-helical and coil conformations was the disappearance of the signals of C3 in β -(1 \rightarrow 3)-linked backbone and the enhancement in relative intensities of glucose substituted C6s in the helix state, as well as the appearance of an asym. and broad peak of C6 in the intermediate of the conformation change. This suggests that the immobilization of the backbone by binding with intra- and intermol. hydrogen bonds resulted in the loss of the signals of its carbon atoms in the triple helix state. An overcoating cylinder model composed of the β -(1 \rightarrow 3)-linked backbone as helix core and the side chains as rotatable overcoat was proposed to illustrate the triple-helical conformation and its transition in the solution
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1980:215667 CAPLUS
DOCUMENT NUMBER: 92:215667
TITLE: Triple helix of a Schizophyllum commune polysaccharide in aqueous solution
AUTHOR(S): Norisuye, Takashi; Yanaki, Toshio; Fujita, Hiroshi
CORPORATE SOURCE: Dep. Polym. Sci., Osaka Univ., Toyonaka, 560, Japan
SOURCE: Journal of Polymer Science, Polymer Physics Edition (1980), 18(3), 547-58
CODEN: JPLPAY; ISSN: 0098-1273
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Mol. weight and viscosity data of schizophyllan (I), an extracellular β -1,3-D- **glucan** produced by S. commune, show that (a) I dissolves in water not as a single mol. but as a trimer, (b) the chains in the trimer are arranged in a triple helical structure similar to that proposed by E.D.T. Atkins, et al (1969) for crystalline β -1,3-D-xylan, and (c) the triple helix of I undergoes an abrupt 'melting' when the content of Me2SO added to the aqueous solution exceeds .apprx.85 wt % . The triple helix is not recoverable once it is broken in Me2SO.

L15 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:25556 CAPLUS
DOCUMENT NUMBER: 132:53728
TITLE: Manufacture of inorganic hardened body having high bending strength
INVENTOR(S): Kubo, Masaaki
PATENT ASSIGNEE(S): Matsushita Electric Works, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000007417	A2	20000111	JP 1998-177854	19980624
PRIORITY APPLN. INFO.:			JP 1998-177854	19980624

AB A raw mix containing hydraulic materials 100, β -1,3- **glucan** 0.05-2, and optionally reinforcing fibers 1-5 weight parts is kneaded with water at 3:1~1:1 weight ratio, molded and hardened to obtain the title product useful for building materials, etc. The hydraulic materials contain portland cement (≤ 80 wt.%), steelmaking slag, and gypsum.

L15 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:289620 CAPLUS
DOCUMENT NUMBER: 128:320889
TITLE: Water-soluble polysaccharide compositions derived from barley malts, their manufacture, and their food applications
INVENTOR(S): Kumasawa, Yoichi; Yamaguchi, Magoichi
PATENT ASSIGNEE(S): Kirin Brewery Co., Ltd., Japan; Japan Maize Products Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10120704	A2	19980512	JP 1996-271083	19961014
PRIORITY APPLN. INFO.:			JP 1996-271083	19961014

AB The compns. comprise (a) α - **glucan** (I) 10-30, β - **glucan** (II) 0.1-10, arabinoxylan (III) 0.1-15, and maltose (IV) 30-80 wt.%, (b) I 30-80, II 1-20, and III 10-35 weight%, (c) 20-40 weight% II and 50-70 weight% III, or (d) 40-100 weight% II and may be obtained from brewers' grains. The compns. mainly containing I, II, III, and IV are recovered from water-soluble fraction obtained by dehydrating brewers' grains preferably after suspending the grains in H₂O. The compns. mainly containing I, II, and III are manufactured by concentrating the above compns. using a ultrafiltration membrane. The above compns. are further treated with α -glucanase or α -glucanase and arabinoxylanase to give compns. mainly containing II and III or compns. mainly containing II, resp. Also claimed are food materials and food containing the compns. which show the following properties, e.g. increasing thickness, holding water, preventing water separation, retaining shape, etc. Brewers' grains were ground, suspended in H₂O, and the aqueous suspension was centrifuged to remove proteins, successively treated with a diatomaceous earth/activated C and ion

exchange resin, concentrated, and spray-dried to give a powder containing I 30.60, II 5.07, III 12.27, oligosaccharides 19.35, IV 37.43, and glucose 0.66 weight%. A milk shake containing the powder instead of sugar had favorable sweetness.

L15 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1991:661844 CAPLUS
 DOCUMENT NUMBER: 115:261844
 TITLE: Inorganic powder suspension and sintered products from the suspension
 INVENTOR(S): Takeuchi, Tatsuro; Sawara, Tetsuya; Tsuchida, Takuo
 PATENT ASSIGNEE(S): Takeda Chemical Industries, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

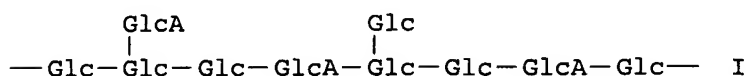
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03097649	A2	19910423	JP 1990-174040	19900629
PRIORITY APPLN. INFO.:			JP 1989-170664	A1 19890630

AB The inorg. powder suspension is prepared by dispersing an inorg. powder into a solvent and adding pectin, pectic acid microorganism-origin 1,3-glucan, and/or animal-origin polysaccharide, as dispersants. The suspension is granulated by spray dryer, press molded, and sintered. The dispersant has a viscosity decreasing effect and improves dispersion stability of inorg. powder. Thus, an 80 wt.% Al₂O₃ suspension containing 0.2 weight% pectin was molded, dried and sintered at 1600° for 3 h to give a rod having a 3-point bending strength 42 kg/mm².

L15 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1990:7854 CAPLUS
 DOCUMENT NUMBER: 112:7854
 TITLE: Preparation of D-glucurono-(1 → 6)-β-D-gluco-(1 → 3)-β-D-glucan sodium salt by NO₂ oxidation of the precursor glucan
 INVENTOR(S): Tihlarik, Karol; Masler, Ladislav; Sandula, Jozef
 PATENT ASSIGNEE(S): Czech.
 SOURCE: Czech., 2 pp.
 CODEN: CZXXA9
 DOCUMENT TYPE: Patent
 LANGUAGE: Slovak
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 257391	B1	19880415	CS 1986-9374	19861216
PRIORITY APPLN. INFO.:			CS 1986-9374	19861216

GI



AB The title glucan (I; Glc = glucose; GlcA = Na glucuronate), a carboxyl-containing derivative of the natural precursor (1→6)-β-D-

gluco-(1→3)-β-D- **glucan** (II) from yeasts, molds, and lichens, which in animals enhances phagocytic and proliferation activity of the reticuloendothelial system, was prepared by oxidation of primary alc. groups of II with NO₂. I is useful as a stimulator of nonspecific immune response in animals and as a skin cosmetics additive. Thus, gaseous NO₂ was introduced into a flask containing 3.24 g II, the product was suspended in 50 mL H₂O, treated with 0.3 g NaBH₄ in 10 mL H₂O for 3 h, acidified to pH 3, and dialyzed at pH 7.5 to give 2.7 g I containing 13.80 wt. % CO₂H.

L15 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1980:610259 CAPLUS
 DOCUMENT NUMBER: 93:210259
 TITLE: β-1,4-Glucan for granules for tablets
 INVENTOR(S): Takeo, Kimihiko
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 55047616	A2	19800404	JP 1978-120521	19780930
JP 56011686	B4	19810316		

PRIORITY APPLN. INFO.: JP 1978-120521 A 19780930

AB Granules for tablets were prepared by mixing mesh 40 β-1,4-**glucan** [9051-98-3] with the active ingredients, diluents, and excipients. When the active ingredient exceeded 60 weight%, the β-1,4-**glucan** should be 100 mesh, when the active ingredient was 40-80 wt.%, the β-1,4-**glucan** should be >325 mesh, and when the active ingredient was 20-60 weight%, the β-1,4-**glucan** should be <325 mesh. Thus, granules composed of 60 weight% 195μ sulfisoxazole [127-69-5] powder, 30 weight% β-1,4-**glucan** powder (100% of it passed 42 mesh, >90% passed 100 mesh, and 50% passed 325 mesh), 9.5% 150 mesh lactose, and 0.5% Mg stearate were made into tablets which had excellent hardness, disintegration time, and absorption. Various ratios for sulfisoxazole: β-1,4-**glucan** and powder sizes were tested.

L15 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1978:141688 CAPLUS
 DOCUMENT NUMBER: 88:141688
 TITLE: Pharmaceuticals containing microcrystalline cellulose powder
 INVENTOR(S): Takeo, Kimihiko; Uesugi, Yorio
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 53009315	A2	19780127	JP 1976-80879	19760709
JP 55016485	B4	19800502		

PRIORITY APPLN. INFO.: JP 1976-80879 A 19760709

AB Difficultly soluble medicinal compds. (10-80 wt.%) are mixed with β-1,4-**glucan** compound powders (20-80 wt.%) and lubricants and (or) surfactants (0.5-10 weight%) and

pulverized to improve the dissoln. rate. Thus, a preparation contained Thiasin [127-69-5] 78, microcryst. cellulose [9004-34-6] powder 20, and polyoxyethylene nonylphenyl ether [9016-45-9] 2%. The preparation had a dissoln. rate of 87% within 10 min.